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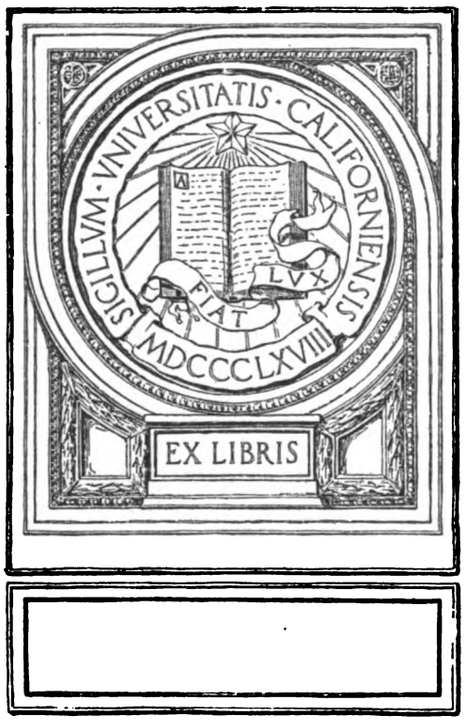
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A separate subject will be set and a money prize given each month, and in July a Travelling Studentship will be awarded to the student who has submitted the best aggregate of work during the year.

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A measured drawing or drawings with perspective sketch of a piece of furniture executed in wood, of not later date than 1800 A.D.

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1. There is no restriction on the size of the drawing to be sent in by each competitor, but only one subject is to be submitted.

2. The subject drawn need not necessarily be in its original position, but may be in a museum or elsewhere.

3. Each drawing is to be accompanied by a short historical and architectural description.

4. A prize of Two Guineas will be given to the author of the drawings considered best by the Editor, or at his discretion the amount may be divided between the contributors. All drawings will be returned to their authors.

5. The drawing to which the prize is awarded will, if suitable, be published in *The Architect*; but the Editor reserves the right of publication without payment of any other drawing sent in.

6. Drawings are to be delivered at the office of *The Architect*, addressed to the Editor, and marked outside "Sketching and Measuring Club," on or before Saturday, January 30, 1915.

7. Each drawing is to be accompanied by a coupon (which will be found below) properly filled up.

8. A criticism on the drawings sent in will be published in *The Architect*, and reference will be made to each under the name of the author or a *nom de plume*. (*See coupon.*)

9. Every reasonable care will be taken of drawings sent in, but the Proprietors of *The Architect* will not be responsible for any injury or loss that may occur.

10. The decision of the Editor of *The Architect* shall be final and without appeal in all matters connected with the Students' Sketching and Measuring Club.

11. The winners of the Travelling Studentships, 1910, 1911, 1912, 1913 and 1914 will be *hors concours* for future Competitions of the Club.

SUBJECT FOR FEBRUARY, 1915.

A drawing approximately full size of a piece of carved ornament drawn freehand and shaded in monochrome brushwork.

SUBJECT FOR MARCH, 1915.

A measured drawing or drawings with details of a piece of wrought-iron work of eighteenth century date.

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1. The Travelling Studentship will be awarded in July 1915 to the author of the best work sent in during the months of July 1914 to June 1915 (inclusive). In the case of students who send in more than one drawing or set of drawings in any one month, the Editor will in making his award select one only from the work of each month to count in the competition for the Studentship.

2. The value of the Studentship will be Ten Pounds, and the holder will be required to make a sketching tour of a fortnight's duration in a district to be approved by the Editor.

3. The sum of Ten Pounds will be paid in two instalments, half before the student starts on his tour, and half when after his return he shall have submitted to the Editor satisfactory work executed during the tour.

4. The proprietors of *The Architect* shall have the sole right of publication of the whole or any part of the work executed by the student during his tour.

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To the Editor of "The Architect."

I herewith submit for January, 1915, the drawing described below, and I declare that the same has been entirely executed by myself. I hereby agree to the conditions published in "The Architect," both as regards the subject for this month and as regards the Travelling Studentship.

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THE ARCHITECT

AND

Contract Reporter.

A WEEKLY

ILLUSTRATED JOURNAL

OF

ART,

CIVIL ENGINEERING,

AND

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FORTHCOMING EVENTS.

Monday, January 4.

Royal Institute of British Architects: Business Meeting, at 8 P.M.

Wednesday, January 6.

Institute of Sanitary Engineers: Presidential Address at Caxton Hall, Westminster, at 8 P.M.

Monday, January 11.

Surveyors' Institution: Adjourned Discussion on the Papers delivered by Mr. Andrew Young (Member of Council) and Mr. L. O. Mathews (Fellow) on "The Report of the Land Enquiry Committee on the Acquisition of Land," to be reopened by Mr. Howard Martin (Past-President), at 8 P.M.

1915.

In all sincerity we heartily wish all our readers a Happy and Prosperous New Year, and this although we cannot feel that as yet the outlook appears particularly bright. The past year has, for architecture and the building trade, been a chequered one. A year ago we were troubled with the prospect of a peculiarly severe struggle between employers and employed. This difference, like many others, has vanished under the compelling necessity for national union in the face of the greatest danger that has ever threatened our national existence and in our participation in the greatest war recorded in history.

And now, at the commencement of another year, we may well consider how we stand. The building trade at the present moment undoubtedly shares in the general condition of labour, which, after five months of war, shows a remarkably small proportion of unemployment, at least as far as the returns made by the various trade unions correctly represent the facts. Of course, as we have repeatedly pointed out, these returns do not necessarily exactly indicate the true conditions with regard to unemployment. For the unions are, as a rule, composed of members whose normal condition is that of employment, and not of those who suffer from chronic irregularity of employment. Some unions include a far larger proportion of the workers in their particular trade than do others, and the unions connected with building are amongst those who enroll only a small proportion of the actual workers in building trades, and hence their returns do not indicate with infallible accuracy the actual position.

The records of pauperism and Poor Law relief show that poverty has decreased since the war began, and thus strengthens the evidence afforded from the trade union returns. So far for statistics. The personal experience of ourselves and our friends shows that building operations are sufficiently active to prevent any evidence of serious unemployment, but the reason for this activity is not altogether comforting. By reason of the building trade dispute in the early part of the year many contracts, particularly in London, were held up, and work on these has now been resumed and is being actively prosecuted. So that the normal amount of building in progress has added to it the work that should have been done months ago, and this it is that has chiefly caused the condition, which we may admit does exist, that unemployment in the building trade is not at present above the normal. But this causal factor is aided also by exceptional employment, directly occasioned by the war, in the hurried building of temporary accommodation for soldiers, in training or in mending, in the equally hurried erection of accommodation, temporary or permanent, for manufacture of warlike implements, munitions, and equipment.

The nation cannot spend a million pounds a day on the war without giving employment to others than those who are fighting or learning to fight. Neither can it take a million men away from their ordinary occupations, or even unoccupation, without reducing the percentage of unemployment. With these diminishing causes of unemployment succeeding in maintaining the normal amount of employment amongst operatives in the building trade, it is clearly evident that there has been a decline in other directions, and this decline has particularly affected those descriptions of buildings with which architects have most to do, so that unemployment amongst architects has reached a very high level.

We must expect that this present state of unemployment amongst architects will result in a subsequent increase of unemployment amongst those whose function it is to put their designs into execution, unless the architects are able very shortly to get to work again.

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What, then, is the prospect of 1915 for the speedy resumption of activity by architects? It can scarcely be expected during the continuance of the war. For although the 350 millions of the war loan is being to a very large extent poured into the pockets of the workmen and the coffers of the employers and middlemen who handle contracts, these will scarcely have either leisure or inclination to spend their profits whilst all their energies and all their capital are feverishly employed in making still further profits. It is quite true that the rush has been most pronounced whilst the new Army has been in course of training and equipment, but the maintenance of that Army when it has crossed the Channel means still more munitions and still more equipment, both for them and for the 60 per cent. of new recruits who, according to military teaching, are needed to keep an Army in the field up to its full strength.

Whilst, therefore, we may see a possibility that when Kitchener's Army is in the field there may be available for expenditure under the direction of architects some of the profits made in its preparation, it can hardly be expected that much will be done in this direction, for there will still remain a certain amount of timidity in the investment of capital, a certain amount of unreadiness to divert profits from further business to bricks and mortar, an unquestionable reluctance to expenditure on anything that savours of luxury and comfort rather than of necessity or charity. Architecture suffers in spite of the existence of unemployment in the building trade by reason of the dislocation of the normal operations of building, and architecture can only revive by the reduction of the dislocation or by a fresh adaptation to the new conditions.

It is clear now to all of us that modern conditions of fighting tend to make wars lengthy. The immense numbers engaged, the great extent of country occupied by actual combatants, the intensely destructive nature of modern armaments, prevent spectacular catastrophes and crushing defeats inflicted by one side on the other. Attrition is a slow process, and, whilst we may have full confidence that our own nation and its Allies possess the harder and bigger grindstone, it is impossible for us to say whether that of our enemy will crack before or after the end of 1915.

We may, if we please, comfort ourselves—or amuse ourselves—in the coincidence that the 14's in history have frequently been marked by confusion and chaos, and the '15's have often been years of fresh starts and buildings-up. 1215 saw laid the foundations of English liberty, with Magna Charta; Agincourt was won in 1415; 1715 saw George I. firmly established on his throne after the Scotch rebellion; 1815 saw Waterloo and the commencement of the hundred years' peace with our kinsmen across the Atlantic. May 1915 see the commencement of another hundred years' peace, and with it prosperity for the art of architecture.

ST. BARNABAS CHURCH, GILLINGHAM, KENT.

THIS church, of which the first portion was erected some few years ago, has now been completed by the building of the vestries and morning chapel.

The builder of this portion was Mr. A. H. Horne, of Rainham, Kent.

The church is built of local red sand-faced bricks and Monks Park stone from the Bath Stone Firms, Ltd. The roofs are of open timber construction, boarded on the back of the rafters and covered externally with Broseley tiles. The glazing was supplied and fixed by Messrs. James & Co., of Willesden; the wood-block floors by Messrs. Jefferies & Co., of Camberwell; the tiled floors by Messrs. Carter & Co., of Albert Embankment; the ironmongery by Messrs. Hart, Sons, Peard & Co., of London; and the heating and lighting by Messrs. Buckler & Beach, of Chelsea.

The work has been carried out from the designs and under the superintendence of Messrs. Cutts, Davis & Boddy, architects.

NOTES AND COMMENTS.

YESTERDAY saw the retirement from active official life of Mr. Andrew Young, who was appointed valuer to the London County Council in 1889. Since that time he has been responsible for the purchase of no less than 25,000,000*l.* worth of property on behalf of the community, and before then he was for eighteen years surveyor to the London School Board, on whose behalf he spent, in one branch of his work, 4,000,000*l.* on sites for schools, following the Education Act of 1870.

These are a few of the more important improvements in which Mr. Young has taken an important part in valuing the property to be purchased: The Kingsway-Aldwych improvement and the Clare Market housing scheme; the St. Luke's area; improvements and housing between Holborn and the Clerkenwell Road, east of Gray's Inn Road; the County Hall scheme, south of the river; the great Westminster improvement, from the Houses of Parliament to Lambeth Bridge, providing for the continuation of Parliament Gardens and the Embankment from the Terrace; the Boundary Street (Bethnal Green) housing scheme—the largest of its kind in London; the rebuilding of Vauxhall Bridge; the rebuilding of Putney Bridge; Blackwall Tunnel; Rotherhithe Tunnel; Greenwich Tunnel; Woolwich Tunnel.

The magnitude of these works, and the responsibility resting on the man who has to see that the community pays only a fair price for the property it is necessary to absorb, is shown by the fact that seven million pounds were spent on two of these schemes alone—those of Kingsway and Westminster.

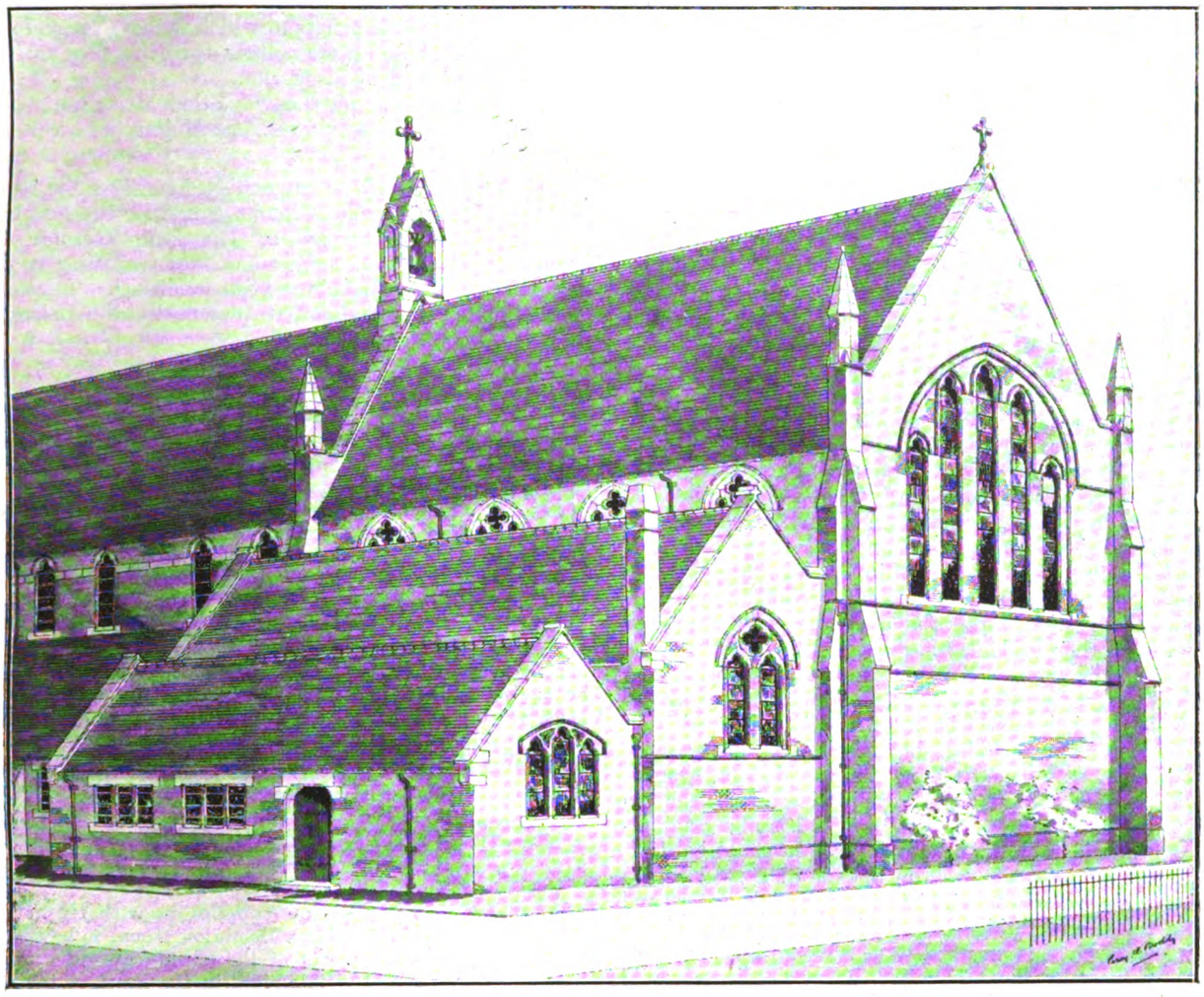
The accuracy of his judgment is shown by the fact that whilst Kingsway has taken ten years to develop, due in part to an idea of other valuers and of capitalists that his figures were too high, there has been quite a scramble during the last two years for the few remaining plots. Of his urbanity and courtesy to those who had to meet him as opponents, whether acting for vendors or for purchasers, all those of our readers who so encountered him will testify, and also that whilst, as his duty required, he fought keenly, he always fought as a gentleman.

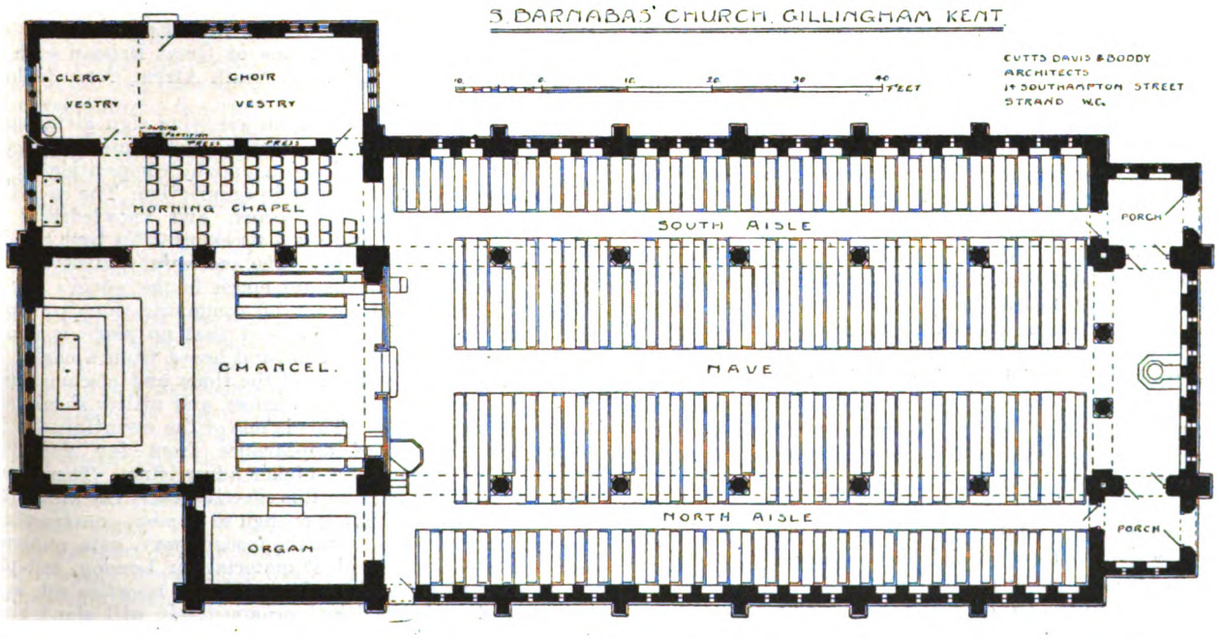
We do not understand the appeal made by the Rev. Charles G. Mackarness, Archdeacon of the East Riding and Vicar of St. Martin's, Scarborough, for charitable contributions towards the repair of the churches in Scarborough which were damaged in the recent raid. It has been stated in the daily Press that the Government would pay the cost of repairing damages caused by the enemy, and that we hold, and we are sure the majority of Englishmen hold, is the proper course. Scarborough's loss should be the nation's loss, and the nation is content to take up the burden rather than let it fall on the shoulders of those who happened to be the immediate sufferers.

The latest addition to the excellent publications recently issued from the Department of Textiles, Victoria and Albert Museum, is a Guide to the Bayeux Tapestry, prepared by Mr. F. F. L. Birrell. There are in the Museum two photographic copies of the embroidery, one, in Gallery 79, an enlargement to full size and hand-coloured, of the series of photographs taken by Mr. E. Tossetter in 1871, and the second another enlargement of them, mounted on rollers and kept in the Students' Room of the Department of Textiles for the convenience of those who wish to make detailed studies. These copies are a justification, if any is needed, for the official preparation of this Guide to the tapestry, now, after many vicissitudes, preserved in a room built for it in the library at Bayeux, which has been called "the noblest monument in the world relating to our old English history."

Some startling figures were quoted during a discussion by the Corporation of Glasgow of the proposed scheme of the Labour group for the erection of cottage dwellings on ground belonging to the Corporation. The proposal was moved by Bailie James Stewart as

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follows:—"That a sum of £30,000 be set aside out of the revenue of the Common Good for the current year, to be lent, free of interest, to the Special Committee on Cottages for the Working Classes for the purpose of erecting cottages on unused ground belonging to the Corporation." He said that Glasgow, while it was the second city of the Empire, was the most crowded and the most densely populated according to its area of any of the big cities of Great Britain. In Glasgow they had a total of 218,000 occupied houses, of which 37,000 were one-roomed houses and 105,000 two-roomed houses —a total of 142,000 single and two-apartment houses, against 76,000 houses over that accommodation. That was to say, there were twice as many one-apartment and two-apartment houses as there were houses of superior accommodation. During the last few years a complete change had taken place with regard to the housing of the city. Some years ago, when it was proposed that

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the Corporation should put its hands in the mortar tub, they were met by the outcry from the proprietors of property that the Corporation had no need to do it, because there were a great number of unoccupied houses in the city. Two years ago there were 22,000 unoccupied houses in the city. Last year there were 18,000 of these houses. This year the figure had fallen by 33 per cent. down to 13,000, and the bulk of these were houses under £10 rent. A year or two ago their Medical Officer made the startling statement that there were 10,000 houses occupied that were unfit for human habitation.

In a lecture on "The City and its Bridges," delivered by Mr. T. L. Watson, F.R.I.B.A., to the Glasgow Institute of Architects, the lecturer stated that at the close of the eighteenth century Glasgow, with a population of about 84,000, had four road bridges over the Clyde. To-day, with a population twelve times as large, there were no more, the result being "the perfectly appalling congestion of our streets," which continued to grow with accelerating force. The boundaries of the city had been enlarged, the tramway system had been extended in every direction, and there was now projected a great new boulevard in the direction of Loch Lomond, with the inevitable result of still further increasing congestion, until the question now was not whether another bridge was required but whether one bridge would suffice. Of course, the difficulty lay in the harbour, which was as vital to the prosperity of the city to-day as it had ever been. This difficulty had been looked upon as insuperable, but it could be shown that this was not so. The traffic to be provided for was of two kinds, the harbour traffic originating at or near the quays and docks, and the ordinary road traffic originating at a considerably higher level. These could be dealt with, each at its own level, by means of a road bridge having a clear headway of 75 feet above high water, and with a transporter bridge beneath it for the traffic at the quay level. By this means distances would be shortened, in many cases by about 1½ miles, heavy gradients would be avoided, and the shipping traffic of the harbour would continue as at present free from interruption.

WAR ITEMS.

In connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board have received a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with the inquiries, and lists are being prepared and circulated of articles which inquirers desire (*a*) to purchase and (*b*) to sell. The sixth list is now ready, and may be obtained by United Kingdom manufacturers and traders, together with copies of the previous lists, on application to the Branch.

British firms interested in any of the goods mentioned, either as buyers or sellers, should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

Included in the list of "Articles which inquirers desire to purchase" are: Sheet-iron stove-pipe bends; composition flooring; imitation marble; artificial stone; presses for making bricks and concrete blocks; sand.

To Mr. William Strang, A.R.A., is due the credit of being the first to exhibit a series of paintings relating to the European war. On January 2 he will hold an exhibition at the Leicester Galleries, Leicester Square, of some twenty important pictures completed since the outbreak of war, together with some etchings of the stricken Flemish-towns.

That they are by so original an artist as Mr. Strang suggests that these war pictures will in no way resemble the paintings of battle artists to which we have for so long been accustomed, and there is little doubt that they will be open to a good deal of discussion.

It may be noted, by the way, that Mr. Strang has three sons at present serving in His Majesty's Forces.

Mr. Will Dyson, who has achieved considerable reputation by his remarkable cartoons which for the last two years have been a feature of *The Daily Herald*, has designed a number of satirical cartoons relating to the war, none of which have yet been published. They are to be exhibited on and after Saturday next at the Leicester Galleries, Leicester Square.

COMPETITION NEWS.

DUNFERMLINE.—In connection with experimental dwelling-houses for the working classes to be erected by the Carnegie Dunfermline Trust on a vacant site in Damside Street, the plans of Mr. Burnet N. H. Orphoot, architect, Edinburgh, have been accepted by the Trustees, who have also awarded premiums as follows: 1, Mr. Gavin Paterson, Hamilton (£15); 2, Mr. William Birrell, Dunfermline (£10); 3, Messrs. D. and J. R. M'Millan, Aberdeen (£5).

GLASGOW.—Mr. Kelloch Brown, of Glasgow, is the author of the selected design, "J," for the Glasgow Memorial to Thomas Carlyle. Fifteen designs were submitted by twelve competitors. The water-colour drawing shows a block of rough-hewn Scottish granite from 15 to 20 ft. high, surmounted by a bust of Carlyle. The estimated cost is £450, plus £50 extra for railings, &c.

ILLUSTRATIONS.

DOMINION HOUSE.

MR. A. RANDALL WELLS has supplied us with the following notes on his scheme for a Dominion House to be erected in Kingsway:—The objects of the scheme are to provide, firstly, a tangible and visible sign, in the heart of the Empire's capital, of the magnitude of the British Dominions beyond the seas and of their vast possibilities; and, secondly, to set up an instrument, or great clearing house, that will improve the organisation of the inter-Empire trade, and further strengthen the relations of Great Britain with the Dominions of Canada, United South Africa, New Zealand, and Newfoundland.

Dominion House is to be an arresting sign giving great publicity to the Dominions, and by their close conjunction inspiring them by combination and by competition to the highest efforts in efficiency and organisation. The co-ordination of all the interests, forces, and knowledge of the Dominions into one centre is a necessity. No time could be better for the undertaking. The successful journeys to the Poles symbolise an important epoch in the world's history. The establishment of means of communication, transport, and reproduction is so advanced that no place is remote. The world can almost be seen and heard from a chair. The house would be the outcome of the times and circumstances; its large simplicity, upstandingness, and utility should earn it instant recognition. This is one of the essentials—an immense effectiveness of appearance from far and near, avowedly an effort in the higher advertising. There would be no difficulty in gaining this effectiveness. On the positive side make the building big enough to be seen, construct it on lines of beauty suitably, in the modern way, with reinforced concrete, clad it in the best material for London, and plan it for convenience and comfort. On the negative side avoid all conventional detail and ornament—it will stand alone, without support from old-world architectural pedantic adaptiveness.

The imagination can hardly realise all those square miles of cultivation, the innumerable ones waiting cultivation, the Dominions' potentialities, their directness of purpose, their individual desire for power, and the fulness of living and desire to explore and exploit all the material world contains. That is where the Tower is a help. There will be no statuary, no symbolic groups; the poles of the wireless station at the top—the central station of the Empire—will be the finest symbol. The building should stand for reality and the present age.

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The building consists of continuous blocks, 100 feet high, and parallel to the streets upon which they border. That in the Strand is 70 feet deep, and divided by a 40-foot wide throughway leading to Kingsway; that to Melbourne Place is 60 feet deep; that to Aldwych 60 feet deep, and divided by the 40-foot way from the Strand; that towards Marconi House averages 100 feet deep; 70 feet are taken up by a theatre—from the centre rises a square tower 400 feet high, the 40-foot way from the Strand to the Kingsway passing through it, and with a 40-foot way upon the left and right leading to the internal courts. These are roofed with glass. The building is planned to give magnificent show and exhibition spaces and comfortable well-lit offices.

The windows have been made as numerous as possible, and in every case come within 12 inches of the floor; London is so often dark. Wall spaces have been avoided, as they could not be made big enough to be architecturally effective without sacrificing light in the rooms.

Bay windows have been used as much as possible to add to the pleasantness of the rooms, and architecturally to give strong vertical lines to the building and to emphasise the curved frontages to the Strand and Aldwych. The same idea is followed in the tower, which is divided up into strong vertical lines; it would be a vivid uprising mass of glittering glass and luminous white stone.

The great arch in the middle of the Strand front leading through to Kingsway will be the main approach to the exhibition courts, and to the residences and hotel with their respective entrances.

In the east block a grand entrance with staircase and lifts to the floors above for Canada; the west block to serve the same purpose for United South Africa.

To the west of the central entrance New Zealand is placed, and to the east Newfoundland.

The great arch is 72 feet high, and forms a cross-vaulting with the entrances to the exhibition halls; this would be lighted at night with an enormous Mercury vapour light, throwing the light up into the vault.

HOTEL DE VILLE, BRUSSELS.

THE Hôtel de Ville of Brussels, with its picturesque accessories as Samuel Prout saw it, forms the subject of our reproduction to-day from "Continental Sketches." In view of the threatened destruction when the Germans leave Brussels, the plate will be of interest, even though we may hope that this threat is but one more piece of Prussian bluff.

AT a recent Local Government Board inquiry at Huddersfield, at which the Corporation sought new powers with regard to the conversion to the water-carriage system, it was stated that the cost of the conversion would be £140,988, but the saving in scavenging would be £7,818 a year.

MR. STOCKDALE HARRISON, Senr., F.R.I.B.A., of St. Martin's East, Leicester, architect and surveyor, whose death took place on November 10, left £22,509. An account of Mr. Harrison's career appeared in our issue of November 13.

MR. DAVID BALFOUR, M.I.C.E., F.G.S., of Myre Hall, Houghton-le-Spring, died last week in his seventy-seventh year. He carried on the profession of a civil engineer in Newcastle, being the senior partner of the firm of Messrs. D. Balfour & Son, whose work has been carried on for a number of years by his son, David Balfour, jun., M.Inst.C.E. He served his pupilage with Mr. John Fulton, C.E., late city engineer of Dundee and Newcastle, and went to England fifty-one years ago, when he was appointed engineer to the Sunderland and Houghton-le-Spring Highway Board. He carried out a large number of engineering works in England and Scotland, including bridges, sewerage, and sewage disposal works, water supplies, tramways, railways, shipping staithes, shipbuilding yards, &c. He gave evidence before many Royal Commissions, and contributed a number of papers to scientific societies.

THE Estates Committee of the York Corporation have had under further consideration the question of the design of the proposed new Cap of Maintenance which the King has promised to present to the City, and they have adopted a design prepared by the York School of Arts and Crafts. The design is, as far as can be ascertained, of the fourteenth-century period, when the first cap was presented to the city. The cap is of crimson velvet, trimmed with ermine, and with the sides turned up. Instructions have been given for the drawing to be forwarded to the King for approval, with a request that the cap may be ordered from Messrs. R. W. Anderson & Sons, York.

THE TOWER OF LONDON.*

By H. FRANKLYN MURRELL, A.R.I.B.A.

THE screw may twist and the rack may turn,
And men may bleed and men may burn.
On London town and all its hoard
I keep my solemn watch and ward.

Sir William Gilbert.

I am not concerned this evening so much to give an exact chronological history of the Tower or to trace with archæological precision the exact date of each wall and tower, but I am anxious that we should all catch the spirit of the Tower and realise its significance in our national story, and for this we shall need a measure of the historical sense, and, above and beyond all, a lively imagination. It must be confessed that by some unhappy chance everything conspires to prevent us realising the real Tower atmosphere. To many of us the first thought suggested by the Tower is that of stale buns and of flashing jewels, with a general background of horse-armour. In the words of the inimitable Dan Leno, "It's a nice old place to spend a happy day." It seems the almost universal custom of all accounts of the Tower to divide the subject up as "The Tower as a palace," "The Tower as a prison," &c. I do not propose to weary you in this particular way. It is true that the Tower has been a Royal palace, a treasure-house and mint, a fortress and arsenal, and all these things at one and the same time, but its supreme historical significance is in its character of State prison, the English Bastille.

Characteristically the impulsive French pull down their Bastille, the phlegmatic English turn theirs into a harmless old museum whose familiarity breeds contempt in the minds of children accompanied by maiden aunts. It is unquestionably a tower of tragedy: its comedy is only a grim humour. A cruel and bloodthirsty old ruffian, he has spared none; he has had a special thirst for blue blood, the young, the fair, the faithful alike he has caged, racked, headed. First a word as to the Tower site. At the extreme east of the early portion of the City, the site doubtless had considerable stragetic value owing to the steep slope of what we now know as Tower Hill. There is no doubt that the Roman London wall, just as the City ditch of the Middle Ages, terminated at this point. The remaining portion of wall to the east of the White Tower was the bastion at the south-east angle of the Roman wall.

This fort, the key to London approached from the sea, doubtless was the object of attack by marauding Danish pirates. The Conqueror—no mere strategist—was quick to appreciate the military significance of the site so apparent to the Romans. He planted here the great fortress which was to dominate the City of London for so many centuries, but from his time onward the function of the Tower has been that of guarding the King from the City rather than that of guarding the City from any external danger.

THE PLAN OF THE TOWER.

The conglomeration of buildings forming the present Tower are at first site difficult to reduce to a systematic plan. The historic portions, however, can be grouped as follows:

The Keep, or White Tower, protected by an inner line of walls with bastions at all angles and intermediately thirteen in all, with a narrow street between this and the outer wall, which abuts immediately on the moat and has three bastions on its north side and six towers on the river front.

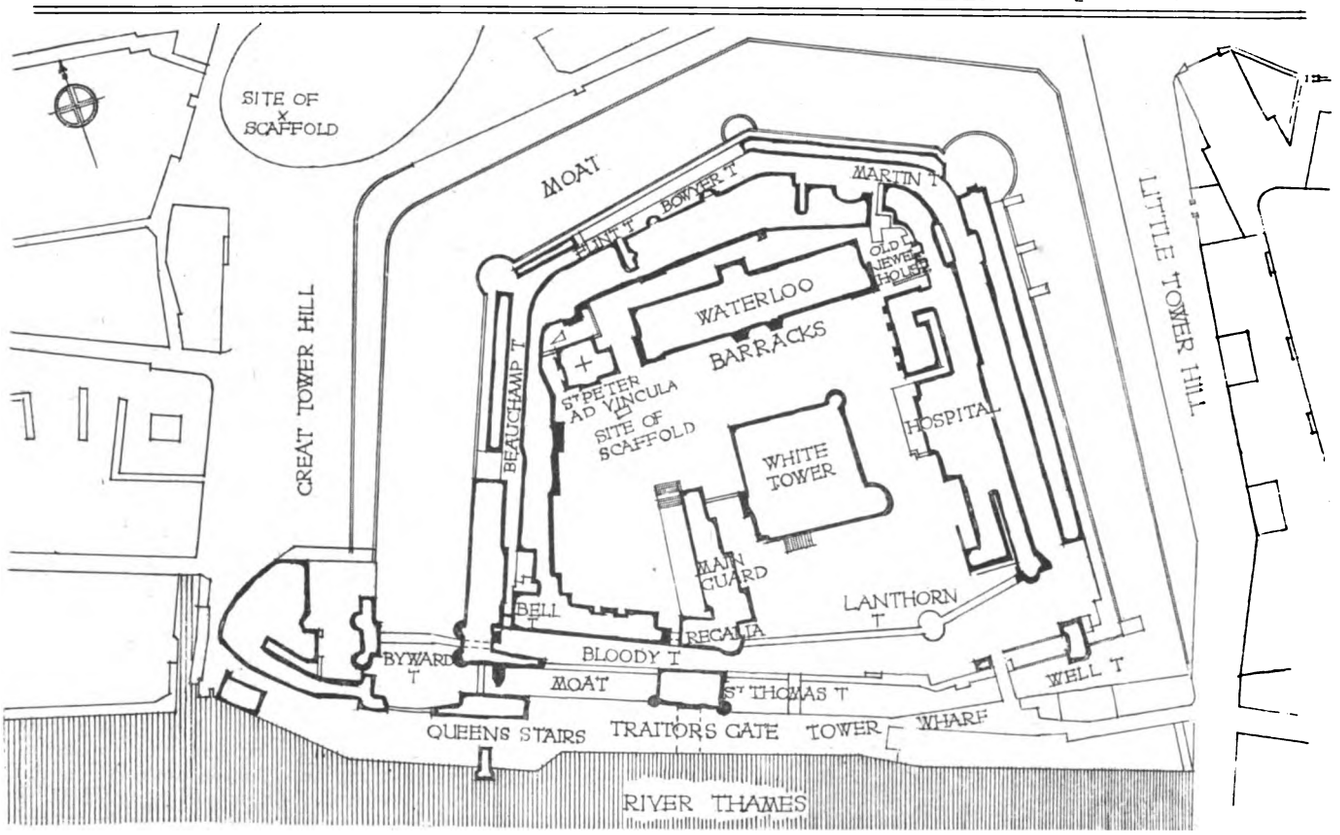
On this side the street widens out, with Traitors' Gate in the centre, forming the approach from the river itself. Apart from this, the only approach was by the bridge across the moat at the south-west corner, guarded at its inner end by the Byward Tower and at its outer end by the Middle Tower. From the true and exact draught of the Tower Liberties surveyd in the year 1597 by Juliemus Haiward and T. Gascoyne it is evident that beyond the Middle Tower was the Lyons Tower, a kind of semi-circular platform round which the moat made a detour, crossed by the Lyons Gate, so that it was necessary to cross the moat at least twice to gain access to the outer ward from the City.

It might appear to a casual observer that the completion of the moat on the river side is an unnecessary precaution,

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* Read at a meeting of the Upper Norwood Athenæum.

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but from the prison aspect it was undoubtedly an advantage to have the captive cut off from friendly aid in this direction. With regard to the other buildings, they are just those of a complete prison, chapel, Governor's House, and Guard House. An item of the plan definitely suggesting the palace must have been the Royal menagerie standing on the site of the present ticket office, which seems to have existed from Norman times till removed to Regents Park in 1834.

And now to turn to the most important aspect of the Tower—namely, its unique history.

The Norman Tower.

The White Tower, as we know it, is truly Norman. In its essential plan and massive construction it is a typical Norman fortress. As we have pointed out, in common with most of the Conqueror's building, its purpose was to dominate the newly conquered country.

It is tolerably certain that the White Tower as we know it was the work of Gundulph, a monk of Bec, in Normandy, afterwards Bishop of Rochester. Doubt has sometimes been thrown upon this by the discovery in 1720 and 1777 of remains of very massive walls near the White Tower. It is difficult to know to whom to attribute these if not to Gundulph.

We may picture, then, the energetic Bishop of Rochester not merely occupied with the great works at Rochester Cathedral itself but aiding his strong master in rearing the castle which was to be the final refuge of the kings of England from their turbulent subjects for some centuries. Do we realise what a mighty structure this great keep is, a great stone cliff? An oblong 116 feet from north to south, 96 feet from east to west, and 92 feet high—that is, higher than an ordinary modern building may rise under the London Building Act. Walls 15 feet thick, a large newel stair in the north-east corner, with minor stairs at the north-west and south-east angles give access only up to the first floor. An inner wall 7 feet thick running north and south divides the building for its whole height. There was apparently a large archway on the North side originally.

Architecturally the White Tower is effective because of its mighty scale, relieved by its four picturesque little turrets. In common with all our City monuments it was, of course, doctored by Sir Christopher, who in this case with but slight effort converted windows from Norman to Renaissance. But fortunately no restoring hand has been laid on the Chapel of St. John, unquestionably the finest chapel remaining in any Norman castle. It is Norman at its best, massive to a degree, yet possessing in its severity an atmosphere and reverence essentially desirable in a church building.

In this chapel was enacted the first scene in the greatest of Tower tragedies, the murder of the Princes.

Sir Robert Brackenbury was kneeling here when Richard's messengers came post-haste demanding the death of the Princes, a demand to be met with a refusal.

Here we must picture Henry I.'s dead Queen lying in state, and Mary attending Mass in thanksgiving for the suppression of revolt. And here the night before the coronation of each king aspirants to the order of knighthood would watch their arms in silent vigil.

To pass on to the rooms adjoining the chapel now used as armouries.

Here many famous prisoners have been kept—Baliol, King David of Scotland, King John of France, and that interesting captive Charles Duke of Orleans. The coloured picture by the latter now preserved with a volume of his poems in the British Museum is indeed one of the most valuable records we possess of the appearance of the Tower in the Middle Ages. With true artistic licence, and to show interior and exterior at the same time, the artist has opened a great arch in the middle of White Tower, and shows the Duke at work within. The ubiquitous poet is seen also at the window sonneting, also in the courtyard receiving a loyal arrival from France.

On the upper floor was the ancient Council Chamber, the scene of many great happenings, undoubtedly the most dramatic was that which involved the death of Hastings. Here we see Richard III. breaking in upon his Lords in Council with the exclamation, "What are they worthy to have that compass and imagine my destruction?" to which Lord Chamberlain Hastings answers, "If any have so heinously done they are worthy of heinous punishment." Ultimately the furious King orders his arrest—"I will not to dinner till I see thy head off." Hastings is hurried down the stair of the north-east turret. As the story goes, owing to building operations the path to Tower Green is obstructed, so, to please the hungry king, who is watching from a window of the Council Chamber, Hastings is compelled to lay his head on a convenient timber. It is to be hoped that the king enjoyed his lunch. The keep was furnished completely for a siege with kitchen, well, &c., but most of the accommodation in the lower part was for prisoners. It is difficult to realise the terrible scenes which these innocent looking cells have witnessed.

We must picture these cells crowded with Jews accused of "clipping" the coin of the realm in the days of Edward I. In the dungeon forming the crypt of St. John's Chapel the prisoners taken in Wyatt's rebellion were kept.

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Some of the larger dungeons entered from the stair on the north side were used as torture chambers. We know for certain that Guy Fawkes was tortured on the rack and kept in Little Ease between his sufferings, but perhaps it is better not to pursue the horrors of the White Tower further.

ST. PETER AD VINCULA.

This building is architecturally uninspiring, but externally at any rate it has a peaceful look suitable to its historic part, "porte after stormie seas." And here all the noble dead from the scaffold on Tower Green, almost at its door, have been found. The account of the finds at the restoration of 1876 are most valuable. Fear of incurring Royal displeasure probably accounts for the careless and rather shallow interment of many of the victims. Of the bones of Anne Boleyn Mr. Hoyne Bell says: "The forehead and lower jaw were small and especially well formed. The vertebræ were particularly small, especially one joint, which was that next the skull, and they bore witness to the Queen's lyttel neck."

TOWER GREEN.

Tower Green was originally divided into garden, parade ground, and burial ground.

The paved and railed plot marks the site of the scaffold within the Tower. This seems to have been reserved for Royal sufferers or those who were likely to arouse too much public sympathy. The first victim to suffer here was Anne Boleyn in 1538.

She seems to have been beheaded with a sword by the hangman of Calais, and her body thrown into an arrow-chest of elm.

Lady Jane Grey suffered here in 1553. It is unquestionably the most pathetic of Tower stories. Her husband was beheaded first. As the record has it: "His carcase thrown into a cart and his head in a cloth he was brought into the Chappele within the tower when the Lady Jane whose lodging was in Master Partridges house dyd see his ded carcase taken out of the cart as well as she dyd see hym before alyve going to deathe, a sight to hir no less than deathe."

There do not seem to be many records of the last moments of Queen Katherine Howard, but one testifies that the Queen and Lady Rochford "made the moost godly and chrystian end that ever was heard tell of I thynke sins the world's creation."

Beauchamp Tower.—The records—made mostly by prisoners of Tudor times—on the walls of the large upper prison chamber deserve a paper to themselves. It is impossible to deal with them here.

The upper chamber must have been a comparatively comfortable prison, not without some architectural pretensions, and the inscriptions, Catholic and Protestant alike, show a fine spirit of courage and faith.

Devereux Tower—named after Robert Devereux, who was imprisoned in this tower in the reign of Elizabeth—has an interesting vaulted kitchen.

Flint, Bowyer, and Brick Towers are the towers of the inner wall on the north side working from west to east. The first of these was built in 1796 on the site of an early tower known as Little Hell.

The Bowyer Tower, so named from a bowmaker who had his workshop here; the lower part is of Edward III.'s date, but the upper more recent.

Brick Tower.—Chiefly interesting on account of its association with Raleigh.

Martin Tower, at the north-west corner of the inner wall, is interesting as having been the ancient Jewel House, the scene of Col. Blood's famous attempt on the Regalia. Here the seven bishops were crowded together—a late scene in Tower history, it is true, but quite worth recalling. Leaving Westminster amidst the shouts of the people, "God bless the Bishops," they arrive at the Tower, and, walking up the steps at Traitors' Gate, men and officers ask their blessing on their knees. At Evensong in St. Peter at Vinculas the Lesson for the day is "In all things approving ourselves as the ministers of God in much patience, in afflictions, in necessities, in distresses, in strife, in imprisonment." It is not necessary to recall the scenes of popular delight on their release.

The Constable, Broad Arrow, and Salt Towers are on the eastern side of Inner Ward; they are not specially remarkable for historic happenings.

Towers of the South Side, Wakefield.—So called from Yorkist prisoners having been placed here after the battle of that name. The lower portion is of Norman date. The upper portion, now used for the display of the Crown Jewels, is of Henry III. time. It is of octagonal plan, with a recess on the south-east side, used in ancient times as an oratory. Beneath the Jewel House is a terrible dungeon, where Highlanders were herded together after Culloden.

Bloody Tower.—It is most unfortunate that we were unable to see the interior of this, perhaps the most historic spot in the whole Tower—haunted by ghosts, they say, and no wonder. First, then, come the ghosts of the Princes.

> "O thus," quoth Dighton, "lay the gentle babes:"
> "Thus, thus," quoth Forest, "girdling one another."
> When Dighton thus quoth on: "We smothered
> The most replenished sweet work of nature
> That from the prime creation e'er she framed."

So Shakespeare's version of the tragedy. It was not till the time of Charles II. that the skeletons were found beneath the steps of the White Tower. Not less of a tragedy, perhaps, was the imprisonment of Raleigh here from 1604-1616. It must have been a terribly cramped life for the great adventurer writing his "History of the World" in this Tower, in spite of his chemical experiments and walks in the Constable's Garden. But walking in ghostly company with Raleigh we must see his friend, Sir Thomas Overbury. Imprisoned, poor man, for condemning the marriage between Somerset and Lady Frances Howard. The latter, to revenge herself, arranged for his slow poisoning, but, this proving tedious, he was smothered after the manner of the Princes.

Felton and Laud may haunt this tower, but perhaps the most interesting figure is that of Judge Jefferies. We can picture the old man having been "taken" in an ale-house at Wapping, cheering the spirits and his own, "imbibing strong drink," and dying ultimately of delirium tremens.

Traitors' Gate.—Unquestionably this is the show spot of the Tower. The great arch, 62 feet span, carrying St. Thomas Tower, the ancient oak gates, and the historic steps only require brown Thames water lapping them to complete the picture. I cannot imagine anyone possessed of the historic sense failing to be stirred by the associations of this tragic stairway. Queens Anne Boleyn and Katherine Howard, in turn having last their Royal master's favour, came through Traitors' Gate on their way to Tower Green. Most pitiful story of all, the nine-day Queen, Lady Jane Grey, passed this way. And it must have been with no small foreboding that Princess Elizabeth, consigned to the Tower by Queen Mary, landed at Traitors' Gate on Palm Sunday. How should she know that in a few years she would leave the Tower on her way to her Coronation at Westminster? Time fails us to tell of Cromwell Earl of Essex, Seymour Duke of Somerset, Devereux Earl of Essex, the Duke of Monmouth, and the Bishops, but this spot has seen them all.

St. Thomas Tower, named after St. Thomas of Canterbury, appears to have at one time contained a chapel; it is now the residence of the Keeper of the Crown Jewels.

Byward Tower.—Supposed to have been so named from the by-word, or password, having been given here. On the riverside a postern gate gave access by a drawbridge to the royal landing-place on the wharf.

The Wharf.—This was constructed by Henry III., who did so much tower building. Thames-side building has always been risky, as many a builder knows to his cost. When Henry's river wall was swept away by a high tide the citizens rejoiced, and, with the fine imagination of mediæval times, said that St. Thomas à Becket had knocked it down with his crucifix; but on each disaster practical Henry only said, "Build it stronger," and, in spite of further battering by St. Thomas, we have Henry's Wharf to this day.

The Moat seems to have been the work of Edward I., and to have been the last important addition to the Tower defences. The draining of the moat in 1843 was doubtless a hygienic gain, but the Tower must have been robbed of a great deal of its picturesqueness and impressiveness in consequence. Contrast in imagination the effect of the mighty walls and bastions reflected in the slimy green water with the smugness of the present gravelled parade ground, redolent of orange peel. The moat was naturally the chief obstacle to the escape of many a leaguered prisoner. Across the north side of it Lord Macquire and Colonel MacMahon essayed escape, having lowered them-

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selves by a rope conveyed to them in a loaf of bread. Unfortunately, after swimming across, they were discovered by a sentry. Better fortune attended Lord Capel, who attempted to wade across, though he seems to have been on the point of calling out for aid, his feet being weighted down with mud, when he was cheered to continue by finding friends awaiting him on the further bank.

Tower Environs.—Just a word with regard to these. On Great Tower Hill was the site of the permanent scaffold. The normal course seems to have been for the sheriffs to proceed to the Tower and demand the bodies of the condemned, then to proceed to the public execution on Tower Hill. It is interesting that in the later executions, as Lords Lovat and Kilmarnock, every detail seems to have been arranged to lessen the brutal horror of the operation. Thus red baize was arranged to receive the heads, and the bodies were immediately put into coffins. This is, perhaps, the most suitable text on which to close this somewhat lengthy, and certainly tragic, story.

The history of the Tower is the history of the English people. It is a story of a millennium of development, steady, slow, sure. Tower records are the dark pages of history, but as we turn them over century by century they grow lighter. A lessening of despotic power, the growth of religious toleration, a larger measure of justice for all: these are writ large on every page, and they have been won in no small measure by the sufferings of Tower prisoners. The rack, the screw, the scavenger's daughter are gone for ever, but it is well that we treasure this grim old monument, and learn from it a profound gratitude for the softer times in which we live, and a mighty admiration for the fine courage and faith of some of those old sufferers.

TESTING PIGMENTS FOR PERMANENCE OF COLOUR.*

By SIR WILLIAM DE W. ABNEY, K.C.B., D.C.L., D.Sc., F.R.S.

IT is some twenty-eight years since the late Dr. W. J. Russell, F.R.S., and myself were asked by the chiefs of the Science and Art Department to investigate the causes of the fading of water-colour drawings when exposed to light. There were, and are, in the Victoria and Albert Museum collection of water-colours many samples of the injurious effects which exposure to light have had on them.

Soon after we started our investigations the Press announced that such an inquiry was under way, and a resolution from the Royal Society of Painters in Water Colours was then sent to the Science and Art Department, urging "the desirability, in the interests of water-colour painters, of the appointment of a water-colour painter in association with Dr. Russell and Captain Abney in the work of investigating the effect of light of various colours upon water-colour pigments." This resolution was considered, and the Department requested the Royal Water Colour Society and the Royal Institute of Painters each to appoint two members to a committee which it proposed to form with a view that we should keep such a committee informed as to the methods of investigation we were adopting. "The committee, with this information before them, would be in a position to judge whether there were any further points they would desire to suggest for investigation, or whether there is any investigation which the committee would themselves wish to carry out."

The committee appointed was as follows: Sir F. Leighton, P.R.A. (chairman), Mr. L. Alma Tadema, R.A., Mr. T. Armstrong, Mr. Sidney Colvin, Mr. Frank Dillon, Mr. Carl Haag, Sir James D. Linton, Mr. E. J. Poynter, R.A., and Mr. Henry Wallis, with Mr. Arthur Torrens as secretary. The scheme that we had thought out was submitted to the committee and unanimously approved, and they did not propose any investigation of their own. For nearly three years we continued our experiments, and in June 1888 we made a report of which the above-named committee also approved. This was issued as a Parliamentary Paper to both Houses of Parliament. A certain number of reviews and various letters appeared in the Press on the subject of the report. The criticisms were mostly of a kindly nature. The facts brought out by the results of our numerous and tolerably exhaustive experiments were not questioned. In one or two cases our interpretation of them was criticised. After a month or two our investigation did not call forth much further notice, and, like the fate of most Parliamentary reports, it remained to a great extent unheeded, except, perhaps, by artist colourmen. Another unofficial committee was formed by some persons interested in the subject of Fading, and the results of their experiments were published from time to time. If I remember rightly, they in no way inpugned the results of our experiments.

There are so many colours in an artist colourman's list that the trial as to the stability of all of them would have increased the number of experiments manyfold. To enable us to judge which were the most necessary to proceed with, the Science and Art Department obtained from forty-five of the principal water-colour artists lists of the colours which they individually employed. From these lists we selected the pigment colours the stability to light of which we concluded ought to be investigated.

Twenty-five years have passed, and I shall not be guilty of indiscretion if I say that we found that nearly all the forty-five were using one or more of what may be called fugitive colours. It would have been interesting if a year after our report had been issued we could have had fresh lists before us of the pigments they then severally used, to see what changes had been made. Some, no doubt, would have thought as one artist did, who argued that whilst some of A.'s colours had been proved to fade, yet all of B.'s were quite safe. Almost a new generation of artists is living now, and, as artists are not as a rule given to reading scientific works, it is quite possible that the report on the fading of water-colours may be unknown to them, especially as it is "buried" as a Parliamentary Paper. It is for this reason that I wish, in a way, to revive if possible the interest in the subject by bringing it before the Royal Society of Arts, and to explain a method of testing any pigment for fading in a short time, instead of having to wait for a year or two before results could be obtained. There are various new water-colour pigments placed before the public from time to time, and it is these which require a simple test.

In reference to the younger generation of water-colour artists, I may say that even older painters sometimes require information.

It was not very long ago that on arrival at a certain foreign capital I paid a visit to an artist friend whose drawings are well known and appreciated in Europe and America. On my arrival I was shown up to the studio and found my friend for the moment the picture of despair. He was extracting pictures from a packing-case which had been returned from another capital after being exhibited for a couple of months the previous autumn.

He pointed out to me that a whole series of those which had been hung near the skylight of the exhibition room had lost colour in parts. Their freshness had gone, though they were still beautiful works of art. Questioning him as to what colour had faded, I found that it was vandyke brown, which he used to give tone to some of his delicate colour-washes. He only knew me as an amateur painter, and was unaware that the question of the fading of colours had been one of my hobbies. I told him the result of our experiments, and furnished him with a copy of our report. On a subsequent visit I found him radiant once more, having obtained a substitute for his vandyke brown which was permanent. I may say that he grieved principally over the fact that his clients had pictures of his which might behave or have behaved as those did which were exhibited.

My friend being a foreigner, I could not blame him for being unacquainted with our experiments on safe colours. Nearer home I have found published a list of colours used by a very celebrated artist. That list contains the names of some which he should have placed on the "black list." One has to imagine what may be said of his pictures by his clients in a few years to come. I have often inquired of my numerous artist acquaintances as to the composition of the palette they use, and in not a few cases have I given warning as to colours which ought not to be used.

I trust I may be allowed to recapitulate briefly the conditions most favourable for the fading of pigments, and those under which the fading of some of them is highly, to say the least, improbable to occur.

Speaking generally, every pigment absorbs or abstracts rays of the spectrum which it does not reflect, and it is the collection of the reflected coloured rays that gives the colour of the pigment. Each particle of a pigment is composed of a very large number of molecules, and these molecules are formed of several atoms, held together by attraction to one another. The rays of light absorbed by the pigment may, by their vibratory motion, shake away from the molecules

* A Paper read before the Royal Society of Arts.

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one or more of the atoms, decomposing the molecules, and thus change the particles of the pigment. This change in composition is shown as fading. Like the silver salts in photography if a body is in contact with the pigment, which can take up the atoms of the shaken-off molecules greedily, then the fading in a given time will become more rapid. Such a body is found in the moisture in the air, so that a damp pigment fades more readily than a dry pigment. In the case where the atoms of the pigment, even with moisture present, refuse to be removed from the molecule, there is no fading.

It was owing to observations on the salts of silver, which behaved as just described, that our experiments on pigments were started. There is always moisture in the atmosphere, so that if a pigment is exposed to light under ordinary atmospheric conditions it is liable to fade; if it will fade at all the fading will show itself eventually. In our experiments the light employed was sunlight and skylight. The pigments exposed had various depths of colour, No. 1 being the lightest and No. 8 the darkest. Half of the paper washed with the varying shades of colour was covered up with black paper, and the light had free access to the other half. The papers were exposed in glass tubes bent over at one end to form a hook. There was a perpetual change of air in the tubes.

The annexed table shows the pigments which were exposed to light in these tubes, and the results of the exposure. The last thirteen showed no signs of fading. The first thirteen are really unstable, and the whole list is placed approximately in the order of instability. The next thirteen are much less unstable:—

Colour	Composition according to Winsor and Newton.
Carmine	Lake prepared from cochineal.
Crimson lake	Lake prepared from cochineal.
Purple madder	Lake prepared from madder root.
*Scarlet lake	Lake prepared from vermilion and crimson lake.
†Payne's grey	Indigo crimson-lake and carbon black.
Naples yellow	Mixture of zinc white and cadmium yellow.
Olive green	Quercitron lake, bone brown, and ultramarine.
Indigo	Extract from the indigo plant.
Brown madder	Lake prepared from madder root.
Gamboge	A preparation of gum resin.
Vandyke brown	Native earth prepared for painting.
Brown pink	Lake made from quercitron bark.
Indian yellow	Prepared "purree" from India.
Cadmium yellow	Sulphide of cadmium.
Leitch's blue	Mixture of Prussian blue and cobalt.
Violet carmine	Lake obtained from root of anchusa.
Purple carmine	Lake obtained from root of tinctoria.
Sepia	From the cuttlefish bags.
Aureolin	Double nitrate of cobalt and potassium.
Rose madder	A lake from the madder root.
Permanent blue	A pale variety of French ultramarine.
Antwerp blue	Prussian blue and alumina.
Madder lake	Same as rose madder.
Vermilion	Mercuric sulphide.
Emerald green	Aceto-arsenate of copper.
Burnt umber	Calcined raw umber.
Yellow ochre	Native earth.
Indian red	A variety of iron oxide.
Venetian red	Artificially prepared sesqui-oxide of iron.
Burnt sienna	Calcined raw sienna.
Chrome yellow	Normal chromate of lead.
Lemon yellow	Chromate of barium.
Raw sienna	Native earth.
Terra verte	Native earth.
Chromium oxide	Chromium sesquioxide.
Prussian blue	Ferro-cyanide of iron.
Cobalt	Alumina tinctured with cobalt oxide.
French blue	Artificial ultramarine.
Ultramarine ash	Extract of lapus lazuli.

Looking at the composition of the last thirteen permanent colours, we cannot fail to notice that they are all native earths or oxides of metals, with one or two exceptions. In fact, all have a mineral basis, whilst the remainder of the list, which have the most tendency to fade, are mostly organic derivatives.

It must be recollected that the light used in obtaining these results was of the most intense nature, and not that to which ordinarily water-colour paintings would be exposed.

The second thirteen colours are probably colours which would not fade in any ordinary light. It must, however, be remarked that when mixtures of colours are employed those colours which are more or less fugitive have a greater tendency to fade than when tested alone. For instance, in a mixture of indigo and Indian red the indigo fades more easily than the indigo does when unmixed. Russell and myself proved this by experimenting with thirty-four mixtures, such as were often used by artists.

The case which I mentioned of the rapid fading of vandyke brown in the light from the sky was probably due to the vandyke brown being used mixed with other colours.

It may be as well to state here we found experimentally that practically every coloured pigment exposed to light *in vacuo* declines to fade, and the same may also be said of pigments exposed in perfectly dry air or oxygen, a condition which is non-existent in the atmosphere in which pictures are exposed to light. The presence of moisture is always required to effect a change in colour, and we also found that the bluer the light to which colours are exposed the more rapidly, in most cases, will the fading take place.

A reference must here be made to the effect of the light from the sky on pigments exposed for nearly two years in a frame in a window with north light. The following colours were in the frame:—

Antwerp blue	Rose madder
Prussian ,,	Carmine
Leitch's ,,	Prussian blue and burnt sienna
Indigo	Prussian blue and vandyke brown
Gamboge	Prussian blue and gamboge
Brown pink	Prussian blue and Indian red
Indian yellow	Indigo and vandyke brown
Naples ,,	Indigo and burnt sienna
Lemon ,,	Indigo and Indian red
Vandyke brown	Rose madder and raw sienna.
Venetian red	Antwerp blue and raw sienna
Crimson lake	Vermilion and chrome yellow
Vermilion	

Our report on the effects of this moderate daylight was as follows:—

Of the single colours, gamboge, indigo, and Naples yellow had slightly faded; brown pink had faded perceptibly to six (the deepest shade but two); carmine had bleached to three; vandyke brown had faded to one and was fainter to four; and crimson lake had faded to five; and all the darker shades had become paler. In mixtures one of Prussian blue and burnt sienna that had changed, the blue had faded. With Prussian blue and vandyke brown, and with indigo and vandyke brown, the vandyke brown had faded. With Prussian blue and gamboge, the gamboge had slightly gone in No. 1, and all shades had become browner. With indigo and gamboge, all the shades had become paler throughout. With indigo and Indian red the indigo in No. 1 had gone entirely, and partly in all tints. The other colours, both single and mixed, had not changed.

This experiment confirms the results which had taken place in strong light. We may, therefore, take it that the list of fugitive and stable colours we have given is the same in feebler light as it was in sunlight. From the permanent thirteen colours we have given, and from the thirteen semi-fugitive colours, we can form a good gamut for the water-colour artist.

Various artifices from time to time have been proposed for preventing the fading of pictures in light. A novel and effective one theoretically was to make the frame into a vacuum chamber. But so far as I know there were practical difficulties existing which prevented its general adoption. Recently a glass has been proposed which is said to prevent chemically the active rays from reaching the picture. I have roughly and not exhaustively tried a specimen of this glass, and exposed fugitive pigments beneath it to light this autumn. I have not found that it prevented the fading of the colours I tried, and I should hesitate to adopt it myself. But I hope that others will try its effect. If it is proved efficient it would be a great boon, and the list of fugitive colours might then be of no use. I have said that the blue light (which includes the violet) is that which is

* Scarlet lake more recently prepared is now made from vermilion and alizurin crimson.

† Payne's grey is now made from carbon black ochre and French ultramarine. Both Payne's grey and scarlet lake should now be much more permanent.

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most chemically active. I found that if a skylight was glazed with signal-green glass and an orange in right proportions to make a white light by their mixture, the colours of pigments appeared as in ordinary white light and the chemically active rays were cut off. The committee I mentioned in my paper satisfied themselves that such was the case, and the Raphael cartoon gallery was so glazed. The public seemed unaware of the peculiar mode of glazing.

May I be allowed to become a little personal for the moment? Having studied the theory of colours from a scientific point of view for more years than I like to remember, when I retired from the Civil Service some eleven years ago I took to painting in water-colours as an occupation. Naturally I endeavoured to get a gamut of colours which should be sufficient in their range and at the same time as permanent as possible. My colour-box now consists of:—

Vermilion	Cobalt
Light red	French blue
Rose madder.	Antwerp blue
———	Cyanin blue
Aureolin	Violet cobalt
Yellow ochre	———
Raw sienna	
Cadmium yellow	(An imitation and permanent)
Madder ,,	vandyke brown
Lemon ,,	(An imitation and quasi-
———	permanent) brown madder
Emerald green	Turner's brown
Viridian	Burnt sienna
Hooker's green	Neutral tint (from my own
(A new mixture)	formula)
Sunny green	Ivory black

All these colours are either in the list of the thirteen permanent colours, or come near them in the next thirteen. None of the colours is in the first thirteen, which, as already said, I class as fugitive colours.

Before adopting these colours I was anxious to see how the mixtures imitating colours with known names would stand the light. A year or two after the report had been published I determined to try if a short cut could not be found to test the permanency of any colour. Some experiments I had made with certain photographically produced colours led me to think that the action of light on pigments in the presence of moisture might be a secondary action, and that the fading might be due to the formation of some oxidising agent produced by the light on moisture in the presence of oxygen. It had been proved in our report that the exclusion of all air from the colour prevented fading, and that colours did not fade when *dry* oxygen was in contact with them, and that only when there was the addition of moisture did the fugitive colours fade. It appeared to me that if oxygen were ozonised in the presence of moisture, the action might be the same as when light was acting with no added ozone present: in other words, that light itself tended to produce an ozonised atmosphere in the presence of moisture, and that it was this which caused the fading.

To test this, strips of the same colours as those which were exposed to the light were moistened and placed in a tube, through which ozonised oxygen was passed in a slow current. The oxygen was ozonised by an ozone tube connected with a coil. As I anticipated, there was a fading of those colours which were affected by light. I have already given the list of single colours which were tried, in their order of "light" stability. Practically this same list is here repeated in the following table, but it also shows the times of exposure to the ozone current which were required to cause fading or destruction of those colours which light had been able to alter. The times given as necessary for ozone to act are approximately the relative sensitiveness to fading by the method described.

Pigments in the Order of Fadings by Light.	Time of Exposure to Fade in Damp Ozonised Air. h. m.
Carmine	0 10
Crimson lake	0 30
Purple madder	0 20
Payne's grey	1 0
Naples yellow	0 45
Olive green	1 5
Indigo	0 40
Brown madder	2 10
Gamboge	0 50
Vandyke brown	1 15
Brown pink	0 30
———	
Iridian yellow	4 0
Cadmium yellow	4 0
Violet carmine	4 0
Aureolin	Unchanged.
Rose madder	4 0
Permanent blue	3 30
Vermilion	Unchanged.
Emerald green	0 45
Yellow ochre	Unchanged.
Indian red	,,
Venetian red	,,
Burnt sienna	,,
Chrome yellow	,,
Raw sienna	,,
Terra verte	,,
Chromium oxide	,,
Cobalt	,,
French blue	3 30
Ultramarine ash	Unchanged.

The same colours were exposed to dry ozonised oxygen, all moisture being excluded. The paper and pigment were carefully dried, and the oxygen had to bubble through a series of bulbs containing strong sulphuric acid, to absorb any moisture which might have been in the oxygen. In no case did the dry ozonised oxygen have any action on the pigments. The most fugitive came out of the exposure-tubes unaltered.

This, be it remembered, was the same when the exposure to light took place in dry oxygen. The pigments remained unchanged.

This experiment proved that unless moisture were present with the ozonised oxygen the test did not work.

It will be noticed that eleven of the first thirteen colours which in our list showed no change under the influence of light, were taken, and only one of them—French blue—showed any change under the influence of ozonised oxygen and moisture, and that was very small. Of the other twenty-six colours only twenty-three were experimented with, and all of them showed an alteration. Of the second thirteen in the list, seven were tried and all proved to be fairly stable colours, aureolin and vermilion, which under the action of light blackened, showed no deterioration; the others, after an exposure to the ozone, showed slight deterioration after about four hours. Of the thirteen most fugitive colours in the list, scarlet lake was omitted. Brown madder and Indian yellow appeared more stable than they did when exposed to light; the remainder followed very fairly the order of fugitiveness given in the list.

Mixtures faded under the influence of damp ozone more rapidly as a rule than did the fugitive colours by themselves. Where one of the colours was stable the fugitive colour completely disappeared, and where both were fugitive—as, for instance, a mixture of indigo and gamboge—both disappeared.

It might be thought that peroxide of hydrogen, which is used for altering the colour of hair and for other purposes, might be a substitute for the ozone treatment. So far I have found it quite inoperative in regard to pigments such as have been tested.

Returning for an instant to my own water-colour box, I show the results of the ozone treatment. The only case where any fading has taken place in any of the colours is that of rose madder, which had a most prolonged exposure. It will be noticed that where I have replaced a colour by a mixture having the same tint—e.g. Hooker's green, made of Prussian blue and aureolin—the colour is a stable one, since both the mixing colours are stable.

With oil paints the ozone test has so far, with me, been unsuccessful. The ozone seems to attack the medium, as the colour is so successfully locked up in it that very little effect is produced, even with the most fugitive colours. This is not what takes place when light acts on oil colours, for in a series of experiments (not yet published) made with them the same final results were obtained as with water-colours.

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So far I have confined myself to water-colour washes, but the same method of experiment gives an answer at once as to whether a wall-paper will remain unaffected by light.

In my own house I have unfortunately had wall-papers which looked pretty and well suited to the rooms, but in the course of two or three years all the prettiness had gone, though a pattern remained. Of some of these papers I had spare rolls, and I tested them with the ozone treatment, and found that it gave the same class of fading as that which the exposure to light had given.

It is quite easy to diagnose whether a wall-paper will stand the light, and I always try and test them before I make a final choice. It is in the delicate tints that fading takes place. Where a paper is heavily coated with a pigment which, when applied more thinly, will fade, it may stand the light for a considerable time before being found out. I show numerous kinds of wall-papers which have been submitted to the test. In some cases the fading is slight but quite marked; in others the fading is much more marked, more especially with certain kinds of papers which have a green tint in them. In a good many cases the papers have been on walls of a room, and the fading is similar to that caused by the ozone.

The test for permanence of colour can be applied to ladies' dresses. Summer dresses are very often of beautifully delicate shades, and have parasols to match the dresses. A few inches of the material of a dress will be sufficient to indicate what may be expected to happen in a summer light. I believe it has often been remarked that at the seaside dresses "go" much more rapidly than at an inland place. The reason for this may be that there is more ozone and moisture at the seaside than there is inland. Ladies also inform me that abroad a dress may not fade in bright summer light when it inevitably would do so in our island. The air on the Continent is, as a rule, drier, and it may be that the want of moisture is the cause of the apparent stability of the colour. Wools and cotton-stuffs can be subjected to the same tests, but where the colours are on paper the tests are more rapidly carried out. The mordants often make the colouring matter more stable than it is on paper. Those dyes I have tried are on the dyed material.

THE ACQUISITION OF LAND BY PUBLIC AND QUASI-PUBLIC BODIES.*

THE report of the committee is divided into five heads, the second being "The Acquisition of Land by Public and Quasi-Public Bodies," and I have been asked to deal with this to-night from the promoter's point of view.

As the conclusions and recommendations of the Land Inquiry Committee relating to the procedure and practice in the expropriation of land for public purposes are the portion of the report appointed for consideration this evening, it may not be superfluous to read them *in extenso*.

"Section VIII.—Summary of Conclusions and Recommendations.

1. Notwithstanding provisions contained in the Housing Acts, 1890-1909, modifying the procedure in the case of insanitary areas and land otherwise acquired for housing purposes, the present methods of obtaining compulsory powers for the acquisition of land are cumbrous, dilatory, and expensive. Especially in the case of smaller local authorities, the difficulty and cost of obtaining these powers often prevent improvements from being carried out. Except in the case of schemes of great magnitude or novelty, recourse to Parliament should not be necessary.

2. Where compulsory powers are obtained, the procedure for assessing compensation laid down in the Lands Clauses Consolidation Acts is needlessly complicated and expensive. The provision that the promoters shall pay the whole of the costs unless the award is equal to or less than the promoters offer, is an encouragement to claimants to pile up costs unduly.

3. The constitution and working of the tribunals which assess the compensation are unsatisfactory. There are objections to leaving the determination of the amount of compensation payable to professional men in private practice.

4. The basis of compensation laid down in the Lands Clauses Consolidation Acts is indefinite, its interpretation admits evidence of an exceedingly speculative character, and it has enabled claimants to obtain awards largely in excess of the real value of the land acquired. The almost universal addition of at least 10 per cent. of the purchase price of the land as an allowance for compulsory acquisition is unnecessary and unjustifiable.

5. "Value to the owner" is unsatisfactory as a basis of compensation. Rateable value is not a suitable basis, since it does not pretend to represent the annual equivalent of the full capital value of the land. The only satisfactory basis for the assessment of compensation will be a valuation based on the market value of the land if sold by a willing seller.

6. The provisions in the Lands Clauses Consolidation Acts as to compensation for injurious affection to other lands than the lands taken enable large sums to be awarded for prospective and hypothetical values, and is unfair as between the owner whose land is taken and the adjoining owner from whom no land is taken, but who may be equally injured. Betterment charges are unsatisfactory for similar reasons—namely, the difficulty of assessing betterment and the unfairness of discriminating between owners who are similarly affected.

7. The provision in the Lands Clauses Consolidation Act that promoters are not allowed to take a "part only" of any house or building is a further cause of difficulty and expense.

8. The knowledge that the obtaining of compulsory powers and arbitration proceedings are so costly, and that the amount awarded will probably exceed the real value of the land, enables owners to exact very high prices in private negotiation from local authorities.

9. The fact that they are at such a disadvantage in exercising their compulsory powers compels local authorities to resort to the practice of buying lands through the medium of secret agents. This practice, though inevitable under present conditions, is open to considerable objection.

10. Local authorities are not, as a rule, allowed to buy land and hold it for future use. Consequently they cannot secure any of the increment in value due to the public services they provide. If they were free to do this, they would not only be able to obtain this increment, but also be better able to control the development of their area and the surrounding neighbourhood.

11. Quasi-public bodies, such as railway companies, &c., are placed in a similar position to local authorities with regard to the land they acquire compulsorily.

Following these conclusions the recommendations we make with regard to the public asquisition of land may be summarised as follows:—

1. Compulsory powers for the acquisition of land needed for public purposes should be obtained in these ways:—

(*a*) For certain specified purposes land should be acquired compulsorily by means of a resolution passed by the local authority requiring the land.

(*b*) For purposes not included in (*a*) compulsory powers for the acquisition of land should be obtained by means of an Order of a Government department, which need not be confirmed by Parliament.

(*c*) Where the magnitude or novelty of the proposals demand it, compulsory powers should be sought from Parliament by means of a private Act under a simplified procedure.

2. The tribunal for assessing the sum to be paid for the purchase of lands, and compensation for severence and disturbance, in all cases of compulsory purchase should be the Judicial Land Commissioners. The Commissioners should have power to award costs in any proportion as between the two parties, to limit the number of witnesses, and to exclude counsel.

3. The basis of compensation for lands taken should be the price they might be expected to realise, if sold in the open market by a willing seller, and this sum should be assessed on the principles laid down in the Finance (1909-10) Act, 1910, for determining the "total value" of land. No additional allowance should be made for compulsory purchase.

4. No compensation should be paid for injurious affection of other lands, nor should any allowance be made for betterment. Compensation should be paid for damage due to severance and disturbance.

5. Promoters should have power to acquire a part only of land or buildings.

6. Local authorities and Government departments should

*** Abstract of Paper by Andrew Young (Member of Council), dealing with the report of the Land Enquiry Committee, read at the Ordinary General Meeting of the Surveyors' Institution, held on Monday, December 14, 1914.**

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have powers to purchase land in advance of their immediate requirements."

The compulsory purchase of lands may roughly be divided into two main divisions: (1) For public purposes, and (2) for purposes of public companies operating principally for private profit. In a paper read before the Institution some two or three sessions ago, it was pointed out that this distinction was drawn, even in early days by Parliament and the Courts, between these two main divisions, and it is unnecessary for me here to repeat the reasons. I propose, as the time at my disposal is short, to limit my observations to the first division, although much I may say will apply equally to the purchase of land by private promoters.

The subject may conveniently be considered under three heads:—

1. Method of obtaining the specific powers.
2. Basis of compensation and matters incidental thereto.
3. Tribunal for assessing compensation.

I.—Method of Obtaining Specific Powers.

The Land Inquiry Report sets out with a wealth of detail the varying methods by means of which promoters may now obtain compulsory powers, the keynote of which is that they are notoriously cumbersome and proverbially expensive.

Generally speaking, a special Act of Parliament or its equivalent is necessary, the effective work for which must be completed before the month of November in any year; and to secure this end the decision of a local authority to apply for powers in practice must be taken before the end of July. As special Acts usually receive the Royal Assent in August, it not infrequently happens that, owing to the necessary preliminary work to comply with Standing Orders of Parliament, powers cannot be obtained for some eighteen months, and may be nearly two years, after the occasion when the powers might usefully have been exercised.

Procedure by way of Provisional Order is sometimes advocated as an improvement on the ordinary Private Bill legislation, and at present the principal avenue of legislation in London on these lines is for educational purposes.

As the preliminaries for a Provisional Order must be completed at about the same time as a Private Bill, and no provisions exist for intermediate necessities being dealt with, there is no advantage over the Private Bill procedure.

Probably the earliest Act giving powers to a local authority to acquire property without the necessity of obtaining the specific authority of Parliament or a Government department is Michael Angelo Taylor's Act. This is not exerciseable by the central authority in London, but the powers have devolved upon the Metropolitan Borough Councils, and are put into force merely by a resolution, which may, however, be impugned in the Courts on the ground of *mala fides*.

A gradual simplification of procedure has followed, the simplest being the putting in force of compulsory powers of acquisition by a mere resolution of the authority charged with a public duty, for the exercise of which the land proposed to be taken is required.

In my opinion it would be perfectly safe for responsible public authorities to be vested with general powers, exerciseable by resolution only, compulsorily to acquire property required for the proper discharge of statutory duties. This would appear to conform with the views of this Institution in the reply of the Council of this Institution to the inquiries of the Land Inquiry Committee as follows:—

"Possibly, however, some further means might be provided by which responsible authorities, where the interests at stake are not of overwhelming importance, might be relieved of the expense of obtaining Parliamentary sanction. In London, for instance, the Metropolitan Paving Act of 1817, associated with the name of Michael Angelo Taylor, permits the City Corporation and Metropolitan Borough Councils to take property, or portions of a property, for a street widening without going to the expense of a special Act.

"The procedure under this Act is complicated and unsatisfactory, but the principle is a useful one, and might with advantage be extended to other large municipalities."

There would appear to me to be no valid reason in restricting such general powers to municipalities: "responsible authorities" might include statutory companies who might be relieved of the necessity of obtaining specific statutory authority for property required for the proper discharge of their statutory duties. Safeguards by way of approval of a Government department or otherwise, which might be considered essential in the case of a company operating principally for private profit, would probably be considered superfluous in the case of a public authority whose actions are open to public criticism, and who under its constitution must within a limited period seek the suffrages of its constituents.

II.—Basis of Compensation and Matters Incidental Thereto.

Value to Owner.—Probably the portion of the subject around which the greatest controversy will arise is that relating to the basis of compensation. It is common ground in this room that the basis of compensation is substantially the value to the owner and damage to other lands belonging to him by reason of the taking of the part required. This basis is now firmly established, principally by means of decisions of the Courts, as there is no specific provision in the Lands Clauses Acts directing exactly what is to be the basis.

Market Value.—In many recent statutes the basis of compensation has been specifically considerably modified. Legislation relating to insanitary areas has always made special provision as to the basis on which the compensation is to be assessed.

The original Housing Act of 1875 fixes the basis as that of market value. In the course of years, however, in connection with the large and costly schemes carried out immediately following that Act, a tendency had developed whereby substantially the only difference between Lands Clauses procedure and Housing procedure was the omission of the 10 per cent. My experience goes back to those years, and I well remember how prominent members of the profession, in giving evidence under the Housing Acts, appeared to consider that the basis of market value intended under the Housing Act was not the same as what was commonly understood to be value in the market. It became a conventional value; much in the same way as there were indications some years ago that valuations under the Lands Clauses Acts were purely conventional and had no real regard to the proper basis that should be adopted. This gave rise to such dissatisfaction that a strong Commission was appointed in 1888 to investigate the whole question, with the result that the law relating to insanitary areas and clearances was codified and amended in the Housing of the Working Classes Act, 1890.

The compensation provisions of this Act take the form which has frequently been referred to as penal. For our present purpose one need only observe that while the basis was still reaffirmed as fair market value at the time of valuation, it further provided that, if the rental arising from the property were enhanced by user for illegal purposes or by overcrowding, the enhanced rental obtained by such conditions must be disregarded and a proper rental assumed having regard to the fair and proper use of the premises, and this adopted for the purpose of calculating the compensation. Whether the actual rental derived or the assumed fair market rental that might be obtained was to be adopted for the capitalisation, regard was specially directed to the state of repair, and if, as was nearly always the case, the property had been neglected and required a substantial sum to put it into a proper habitable condition, the amount of such expenditure was to be deducted from any capitalisation; and it also contemplated the possibility of the value being assessed merely as that of a vacant site to which was added a sum in respect of the old materials.

In some recent statutes dealing with different matters entirely, the purchase price is to be determined by what the property would fetch in the open market. I am referring to the Ancient Monuments Consolidation Act, 1913, where a property the subject of a preservation order may be purchased by the Office of Works at the price it would fetch in the open market.

There has been no legal decision as to what constitutes value to owner, nor indeed until recently has there been of market value. But recently the term "value in the market as between willing vendor and purchaser," of which we have heard much in connection with the Finance Act, 1910, has been legally defined. In the case of Inland Revenue *v.* Clay and Others and Inland Revenue *v.* Buchanan and Others the Master of the Rolls expressed himself as follows:—

"The context before us has turned mainly upon the words 'open market' and 'willing seller.' I think the view ultimately taken by counsel for the appellants, and also for the respondents, as to the meaning of 'open market' is correct. 'Open market' includes a sale by auction, but it is not

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confined to that. It would include property publicly announced in the usual way by insertion in the lists of house agents. But I think that it does not necessarily involve the idea of a sale without reserve. I can see no reason for excluding from consideration the fact that the property is so situated that to one or more persons it presents greater attractions than to anybody else. The house or the land may immediately adjoin one or more landowners likely to offer more than the property would be worth to anybody else. This is a fact which cannot be disregarded. The Solicitor-General ultimately admitted that some regard must be had to the facts. But he urged that one ought only to consider, first, what an outside purchaser would give, say, £750, and then allow the adjoining owner one more bid. In other words, something very small beyond the £750.

"We had our attention called to the valuable judgments of Lords Johnston and Salvesen in the recent Scotch case of Glass *v.* Commissioners of Inland Revenue (unreported), and I accept their view of the meaning of the words 'open market.' The price at which the property was sold in 1910 is not the test of the gross value in April 1909, but it cannot be disregarded. I adopt the language of Mr. Justice Scrutton: 'He (the Referee) was right in this, not because of the sale for £1,000, but because of the reasonable expectation that a willing seller could get £1,000 or more from the nursing home.' An 'open market' sale of property 'in its then condition' presupposes a knowledge of its situation with all surrounding circumstances. To say that a small farm in the middle of a wealthy landowner's estate is to be valued without reference to the fact that he will probably be willing to pay a large price, but solely with reference to its ordinary agricultural value, seems to me absurd. If the landowner does not at the moment buy, land brokers or speculators will give more than its pure agricultural value with a view to reselling it at a profit to the landowner.

"It is for the Referee, whose competence is not challenged, to arrive at a figure. The Court ought not, as a rule, to review his decision on what is in truth a question of fact. I see no ground for supposing that there has been any misdirection in point of law.

"The other point is as to the meaning of 'willing seller.' It is urged that Mrs. Buchanan never was a willing seller; that she never wished to vacate the house in which she was living, and that it was only after pressure from the trustees that she agreed to sell for £1,000. I am disposed to think that a willing seller is a person who is a free agent and cannot be required by virtue of compulsory powers to sell, and that Mrs. Buchanan was a willing seller when, in 1900, she voluntarily agreed to accept £1,000. If, however, contrary to my view, she was not a willing seller, the problem still remains, for the existence of a willing seller, whether Mrs. Buchanan or not, must be assumed for the purpose of the section."

This view of market value is that which has been expressed in this room on previous occasions. An owner is not bound to accept any price that may be offered, and transactions in the auction-room are not conclusive as to market value. A willing vendor not under compulsion to sell may anticipate a purchaser to whom the property possesses special advantages of a general kind. This definition seems to bring the basis of market value extremely close to that of value to the owner as we know it in practice. It also includes so much of the doctrine of special adaptability as should properly be brought into account, while excluding that distortion of it which offends the maxim that promoters should not pay for the value to those vested with statutory powers which a private owner without such powers could not realise.

In these circumstances a claimant would not, in my opinion, be harshly treated if, for land expropriated for a public purpose, he were paid the full market value of the property taken. In these words it is intended to convey that the price to be paid would be that which a willing vendor would accept from a willing purchaser. This connotes no compulsion on the vendor to accept any price a purchaser may offer, and has no necessary relation to the figures realised at a forced sale under the hammer. Moreover, a price arranged on such a basis would be fixed only after consideration of injurious affection and of betterment, and so obviate the discussion of these matters as separate items of claim.

Another subject having an important bearing on the question of value is that flowing from the principle embodied in Section 92 of the Lands Clauses Act: "No party shall at any time be required to sell or convey to the promoters of the undertaking a part only of any house or other building or manufactory if such party be willing and able to sell and convey the whole thereof."

It was early found that this inflicted hardship upon promoters, and various modifications were secured from time to time until at present the Model Clauses provide that parts can be taken if in the opinion of the tribunal assessing compensation such part can be taken without "material detriment" to the remainder. In addition to private Acts, this in effect has also been embodied in recent public Acts such as the Housing Act, 1890, and the Development and Road Improvement Funds Act, 1909.

Allowance for Compulsory Sale.—It has been customary in compulsory purchases to add to that part of the compensation which represents the value of property taken an allowance which varied according to the district, but which in London is invariably 10 per cent.

Legislation of recent years, and particularly a series of legislative enactments dealing with insanitary property, has expressly excluded this allowance. In the series of Housing Acts from 1875 to 1882, and the amending Act of 1890, this additional allowance is expressly excluded in the case of the acquisition of insanitary property. In the Housing and Town Planning Act, 1909, this elimination is not only continued as to insanitary property, but is extended also to the purchase of sites for the erection of lodging-houses.

Legislation of a different character has also disallowed this customary allowance from the Small Holdings and Allotments Act, 1907, and the Development and Road Improvement Act, 1909.

If in compulsory-purchase cases the basis be adopted of market value, the unwilling vendor would be only on the same footing as to price as a willing vendor, and as a solatium for compulsory expropriation an allowance of, say, the 10 per cent. might properly be added to the market value. This should be provided by statute instead of relying upon custom.

These observations relate to property of an ordinary character required for usual public purposes. In my opinion there should be no weakening, but rather a strengthening, of the present penal compensation clauses specially applicable to insanitary property.

III.—Tribunal for Assessing Compensation.

At the present time the normal tribunal in compensation cases is a jury of non-experts, although the claimant has the option of having the value determined by an arbitrator.

The tendency of late years, however, in public Acts has been the elimination of a jury and the substitution of a sole arbitrator.

There is no doubt in my mind that the most satisfactory, because it is the most reliable, tribunal is one of trained experts, and, failing a perpetually constituted tribunal, a single arbitrator of standing is to be preferred. This would accord with the trend of modern legislation.

The Land Inquiry Committee have a novel solution for this problem as set out in the following terms:—

"*Tribunal and Procedure.*

"(*a*) That in all cases where land is acquired under compulsory powers, the final determination of the purchase price, the assessment of the compensation for severance and disturbance due to the claimant, and the apportionment of the compensation as between several claimants, should be determined by the Judicial Land Commissioners.

"(*b*) That the procedure for determining the amount of compensation for the land taken should be as follows:—

"(1) At the time of applying for compulsory powers the promoters should serve a notice on the district valuer and all interested persons as to the lands to be acquired.

"(2) If and when the compulsory powers are obtained the district valuer should assess the market value of the property to be acquired, as at the time of the application for compulsory powers, provided that where the owners or persons interested are unable to agree to the valuation, they should have the right to appeal to the Land Commissioners against the valuation of the district valuer."

It is to be observed that, under these proposals, the district valuer is, in the first instance, to assess the market value of the property, presumably as a whole; and as many of the owners of interests in a property may not know all the particulars to deal with the other interests, or with the whole, it must follow that objections must be made to all such valuations if injustice either to the promoters or to

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owners interested is to be obviated. In the event of non-agreement there would be an appeal to Land Commissioners, not against the valuation of the various interests, but against the value of the whole property, when, presumably, not only would there be a contest as between the promoters and the owners of each interest, but as between the owners of the various interests themselves. Moreover, the effect of such a method of procedure would be to reduce almost to vanishing point the possibility of arrangements by negotiation between the promoters and the owners of any interest, so that the amount consumed in costs, which the Land Inquiry Committee so much deplore, would be greatly increased. I do not know that as surveyors merely looking at it from an interested standpoint we need object, but it would not, I venture to think, be to the best interests of the public or of our profession.

I think it is obvious that the scheme suggested by the Land Inquiry Committee is not practicable. There is no doubt that the appointment of a skilled tribunal upon which the surveyor should predominate would be best, and failing this a single arbitrator. It is, however, particularly essential that questions of value should always and only be determined by a tribunal capable by its experience and personal knowledge of testing the evidence given before it.

Summarising, my conclusions are:

1. The Land Inquiry Committee have established their case, that the present method by means of which promoters now obtain compulsory powers are notoriously cumbersome and proverbially expensive. Although I am not in complete agreement with them as to the remedies they suggest, I think responsible public authorities might be vested with general powers allowing them by resolution to acquire compulsorily such property only as is required by them for the proper discharge of existing statutory duties.

2. I think the Land Inquiry Committee have established their case that the time has arrived when there should be a statutory definition of the basis upon which compensation should be awarded. In view of the fact that the term "value in the market as between willing vendor and purchaser" has now been construed by the Courts, I am of opinion that their suggestion that this should be the basis in the future is one that might be adopted. As, however, compulsory expropriation means that the vendor is unwilling, it would appear fair and proper that he should have, in addition to the value in the market as between the willing vendor and purchaser, some statutory solatium for being compelled to sell. Although not on the grounds for which it was originally adopted, I think this solatium might represent 10 per cent. upon the price as determined in accordance with the definition. But the penal clauses of the Housing Acts for insanitary property should be retained if not strengthened.

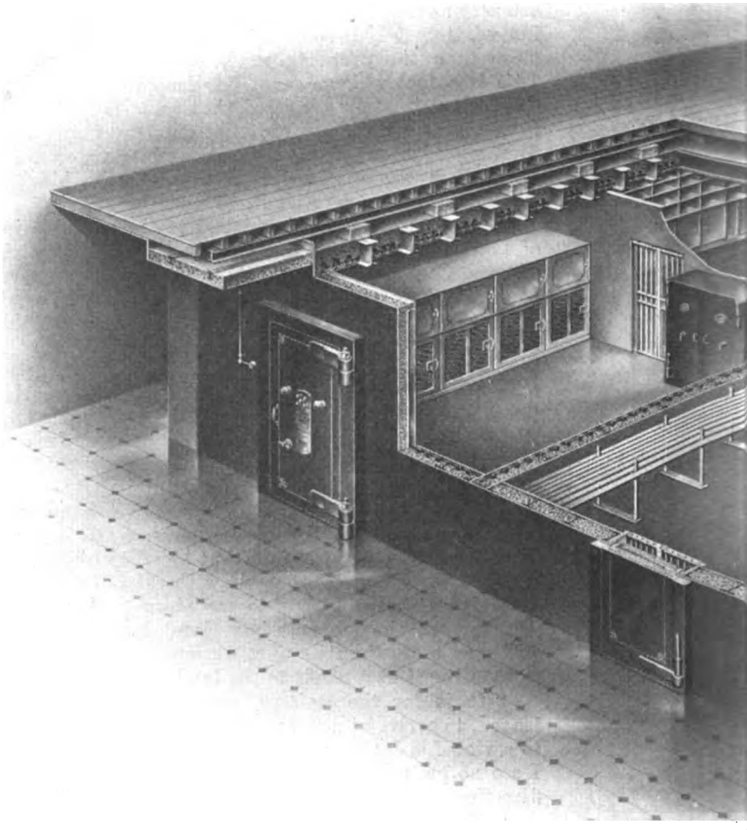
3. I think the Land Inquiry Committee have established their case that the time has arrived when there should be an alteration in the normal tribunal for determining price where property is taken compulsorily. The scheme suggested by the Land Inquiry Committee is not a practical one. In my opinion the best tribunal would be one upon which surveyors would predominate; but, failing this, the general adoption of a single arbitrator, who should have complete powers enabling him to disallow witnesses whom he considers to have been unnecessarily called and also any costs he considers to have been caused or incurred unnecessarily.

MESSRS. BECKETT'S BANK, LEEDS.

AN interesting example of modernising the security accommodation and adding to the banking space in an old and existing building has recently been carried out for Messrs. Beckett & Co. at their Leeds bank, from designs and under the direction and supervision of Mr. Walter Brierley, F.R.I B.A., County architect of York.

The strong rooms were originally on the ground floor, and, in order to provide space for the larger and more modern ones, a basement has been prepared under the banking hall by excavating the earth, removing certain supporting walls and building down a storey.

This work was entrusted to Mr. J. T. Wright, builder, Leeds, and was accomplished without any interference with the work of, or inconvenience to, the bank. Before describing the construction of the strong rooms it is necessary to say that they have been made thoroughly fire and burglar proof, and special attention has been given to the design of



MESSRS. BECKETT'S BANK, LEEDS.—THE "C
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their roofs, so as to ensure their withstanding any shocks which may be brought about by the collapse of the building during fire, and also to enable them to carry the banking hall floor.

The construction of the steel treasury and deed rooms was carried out by the Chatwood Safe Company, Ltd., of Bolton, Lancs.

The stronghold, which is some 40 feet square, is of island form, being surrounded by patrol corridors. It is divided into two equal parts, one half being the burglar-proof treasury for the safe keeping of cash and bearer bonds, and the other half for the storage of deeds, &c.

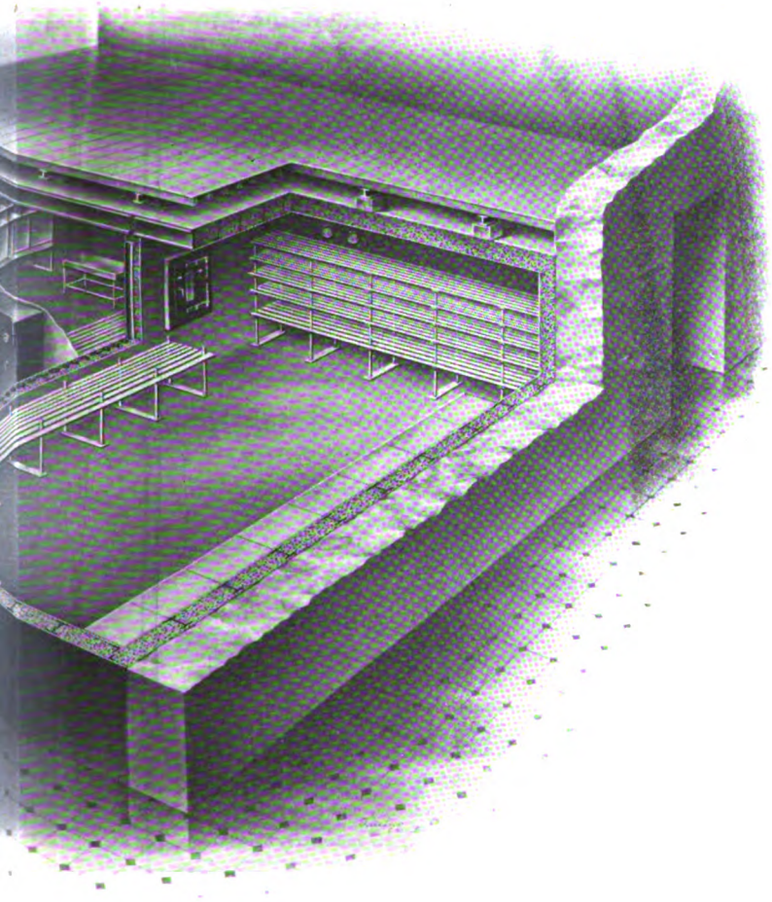
The treasury portion is constructed throughout of steel plates reinforced by a series of interlocking hard steel rails and girders, which are secured to the plates by numerous rivets and screws, and have the interstices between them filled with hard-setting Aberdeen granite and cement concrete.

The deed-room portion is constructed of steel plates reinforced by steel girders, which are attached to the plates and embedded in a 10-inch to 12-inch wall of Aberdeen granite and cement concrete.

The roofs of both rooms have been strengthened by numerous 12-inch and 14-inch girders and 18 inches of concrete in addition to the construction already described.

The doors are constructed of the Chatwood "intersected" steel, which has been tested by various experts and different methods in places as far apart as London, St. Petersburg, and South Africa, and has against every method of attack proved invincible. It may be mentioned in this connection that a Chatwood "intersected" steel safe belonging to Mr. Mark Rubin, a pearl merchant, of Holborn Viaduct, London, E.C., successfully withstood a week-end attack made upon it by burglars equipped with the oxy-acetylene blowpipe, and preserved its contents of £80,000 worth of pearls intact.

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"CHATWOOD" STRONG-ROOM INSTALLATION
(PERSPECTIVE VIEW)

The doors leading to the treasury we here illustrate are built up of slabs of "intersected" steel 4 inches thick, and are secured on all sides by sliding round cold-drawn steel bolts 2¼ inches in diameter. The bolts are secured by two special twelve-lever double-bolt double-bitted key locks and a combination letter lock, which closes the keyholes on the inside surface of the door and thus prevents the insertion of explosives into the locks through the keyholes, or the fraudulent use of the keys. The doors, which are hung on special hinges and can be readily adjusted in case of wear, are easily manipulated, although weighing as much as five tons.

The vestibules of the rooms are fitted with strong steel grille gates controlled by automatic locks, and are intended for use during banking hours.

The strong rooms are furnished with steel-drawer filing cabinets for securities, steel cupboards for cash, steel ventilating shelving for storage purposes, and also movable steel tables. They are lighted by numerous electric lights controlled by various switches inside the rooms, and are furnished with an electric stove; but the electric wiring is so arranged that the current cannot be left on in the rooms when the main doors are closed.

The ventilation of the strong rooms is carried out by drawing warm dry air through them by means of extractor fans placed outside the deed-room, and in such a manner that the air comes through the grilles at the entrances at one end of the rooms to the ventilators at the other. The ventilators automatically close in case of fire. The strength and solidity of the whole installation will be better gauged when it is stated that nearly 200 tons of steel and over 240 tons of Aberdeen granite and cement concrete have been employed in its construction.

In short, the strong rooms and their equipment may be justly described as among the finest, if not *the* finest, installation in the North of England.

WORKING-CLASS HOUSES.*

THAT there is a shortage of working-class houses in the majority of districts but few persons to-day are not ready to admit, while in practically every village, town, and city are numbers of dwellings which only by the greatest stretch of imagination can be termed homes, and certainly cannot be considered fit for habitation.

Of course, I anticipate my readers will be prompted to inquire the cause, since cause must precede effect, and in reply I would suggest that the most powerful has resulted from lack of power to close dwellings as they became unfit without having recourse to judicial proceedings, proceedings often unsuccessful owing to those influencing factors so well known to sanitary officers, and which have always served as an effective brake to necessary progress. And while the old dwellings remained habited—and, sad to say, that there is always a number of persons ever ready to tenant the worst places in preference to the better—the demand for additional dwellings has naturally been weakened. At the same time, owing to the cost of building operations having increased disproportionately to the cost of wages, the rate of building has slackened and the shortage has gradually become more and more acute, and this shortage has done much further to prolong the existence of some of the slums with which this country abounds.

It is not the intention of the author, however, to take up time with the past causes and present effects, but rather to outline some future policy in regard to the dwellings of the workers, and he must necessarily therefore leave those dwellings which are undoubtedly unfit to the mercy of the local authorities who, if they would be more willingly guided by their health officials, would soon obliterate one of the greatest reproaches to England's greatness.

Assuming that all the unfit dwellings were effectually disposed of by demolition, we would then have a large number left which, while not having reached the hopeless stage, are sufficiently bad to require partial reconstruction in order to make them habitable. This reconstruction is generally a difficult problem, and one for which it is almost impossible to define a code of requirements which can be reasonably carried out in all cases; and were such possible, so divergent are the views of various officials and authorities, that the practice in no one town agrees with another. In some isolated instances where an alteration or reconstruction is agreed to the local authority require the local building by-laws to be complied with, while in others the opposite extreme is the case, any attempt at securing some improvement being considered to be sufficient. Some time ago the author, on inquiring of a number of authorities their practice in respect of their attitude towards old dwellings which required reconstruction, was very much impressed by the varied manner in which the work was regarded, and he came to the conclusion that in very many instances the dwellings which were now the most insanitary and unsuitable were simply being given a new lease of life, and would again become in a very few years far behind the minimum housing requirements, and when to these were added those which by virtue of age or unsuitability were falling due to be demolished, the number of uninhabitable dwellings in the neighbourhood would become quite disproportionate to the habitable; in fact, the housing trouble would have increased in intensity.

Now, in order to guard against the possibility of the perpetuation of slumdom by the continual introduction of small improvements in order to secure a temporary extension of life, the author considers that a definite code of minimum requirements should be prepared by every authority, and to this code all properties which are being improved or reconstructed under the Housing Acts should conform. A suitable code should refer to the following matters for the reasons given:—

Foundations.—Where additions are being made to the heights of buildings the foundation should be sufficiently deep and firm to bear the additional weight. The author has seen instances where additional work has had to be removed in view of a threatened collapse.

Drainage.—This, for obvious reasons, should comply with the model requirements in all respects.

Dampcourse.—Many of the old houses bear no traces of a dampcourse, and, although some authorities insist that it should be inserted in the old walls, others do not. The author considers that it is seldom effectually provided unless

* A Paper prepared for the sixth annual general meeting of the Institution of Municipal Engineers held on Saturday, November 27, by Mr. E. Whitwell, F.I.S.E., M.S.A. (Vice-president).

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HOTEL DE VILLE, BRUSSELS.

From "Continental Sketches," by SAMUEL PROUT.

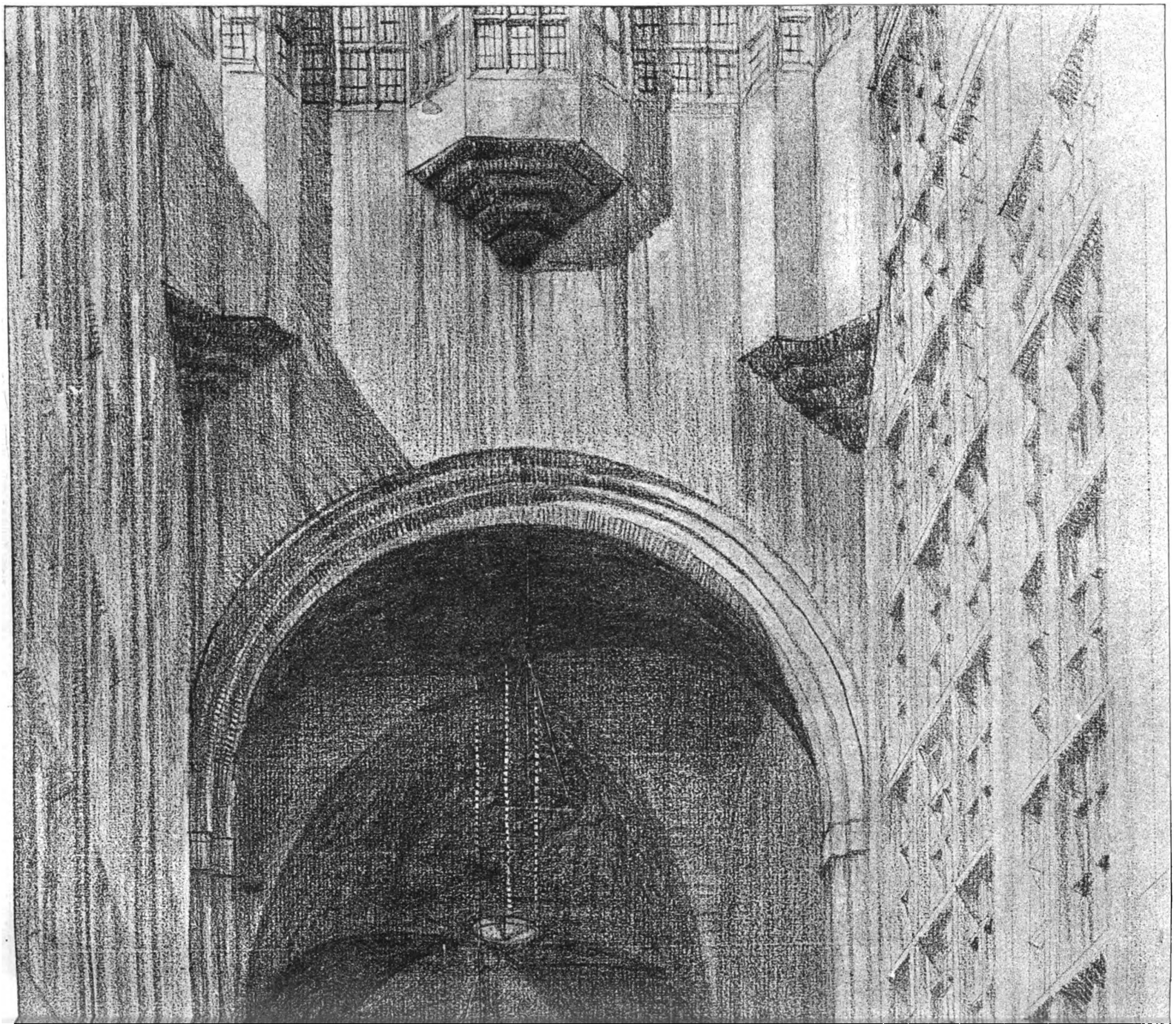
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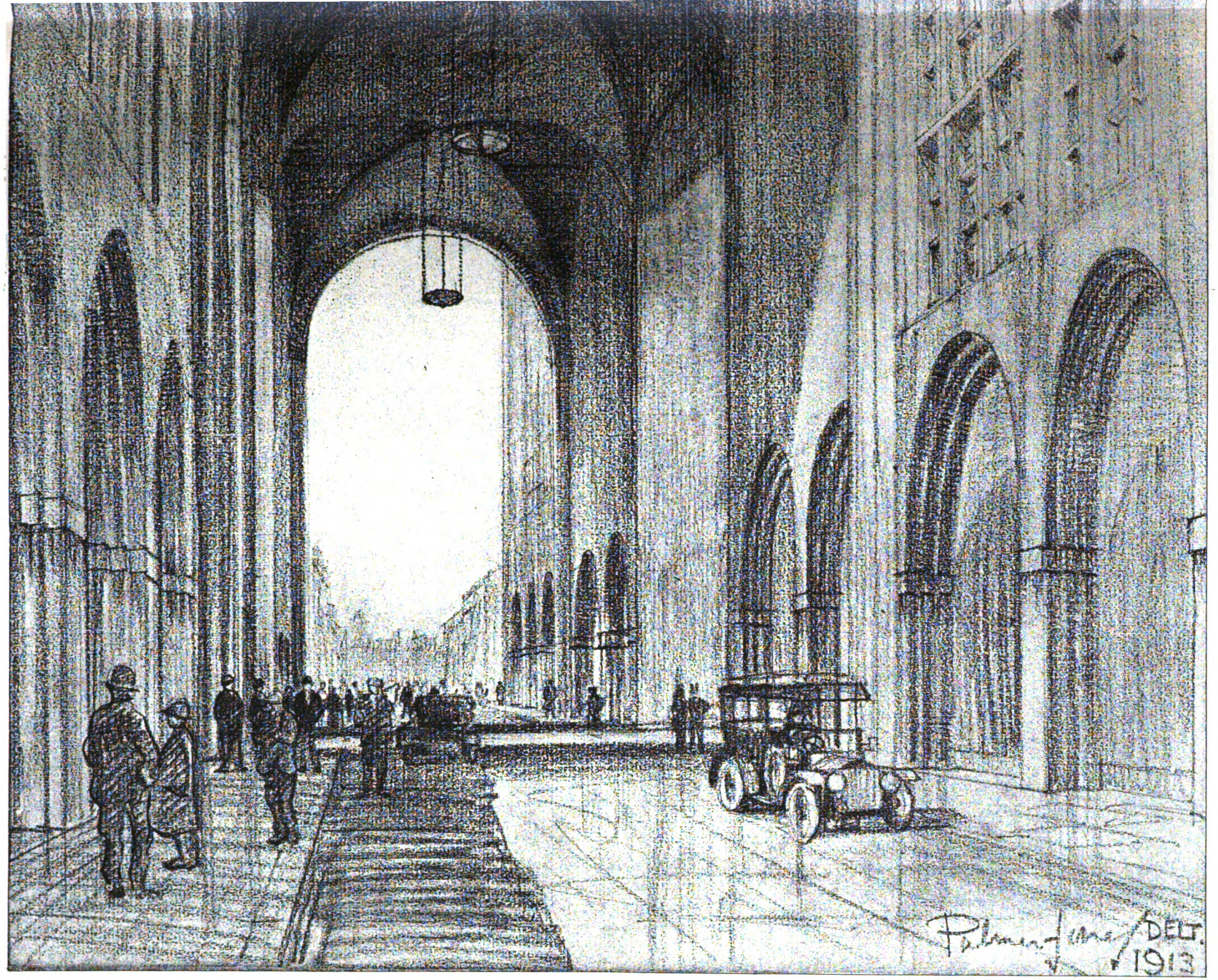
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DOMINION HOUSE: UNDER THE GREAT TOWER, THE ENTRANCE FROM THE STRAND.

(Royal Academy Exhibition, 1914.)

Mr. A. RANDALL WELLS, Architect.

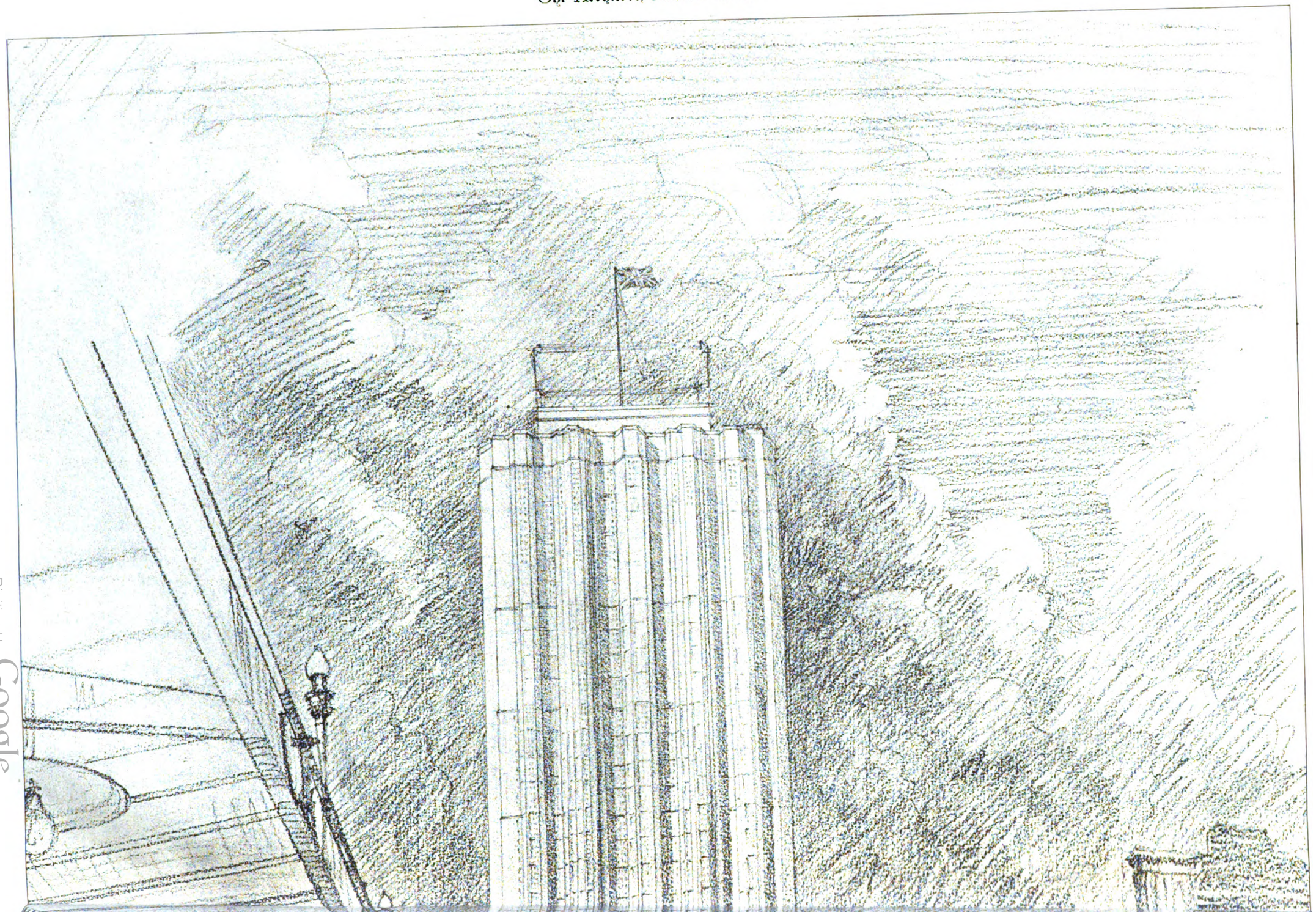
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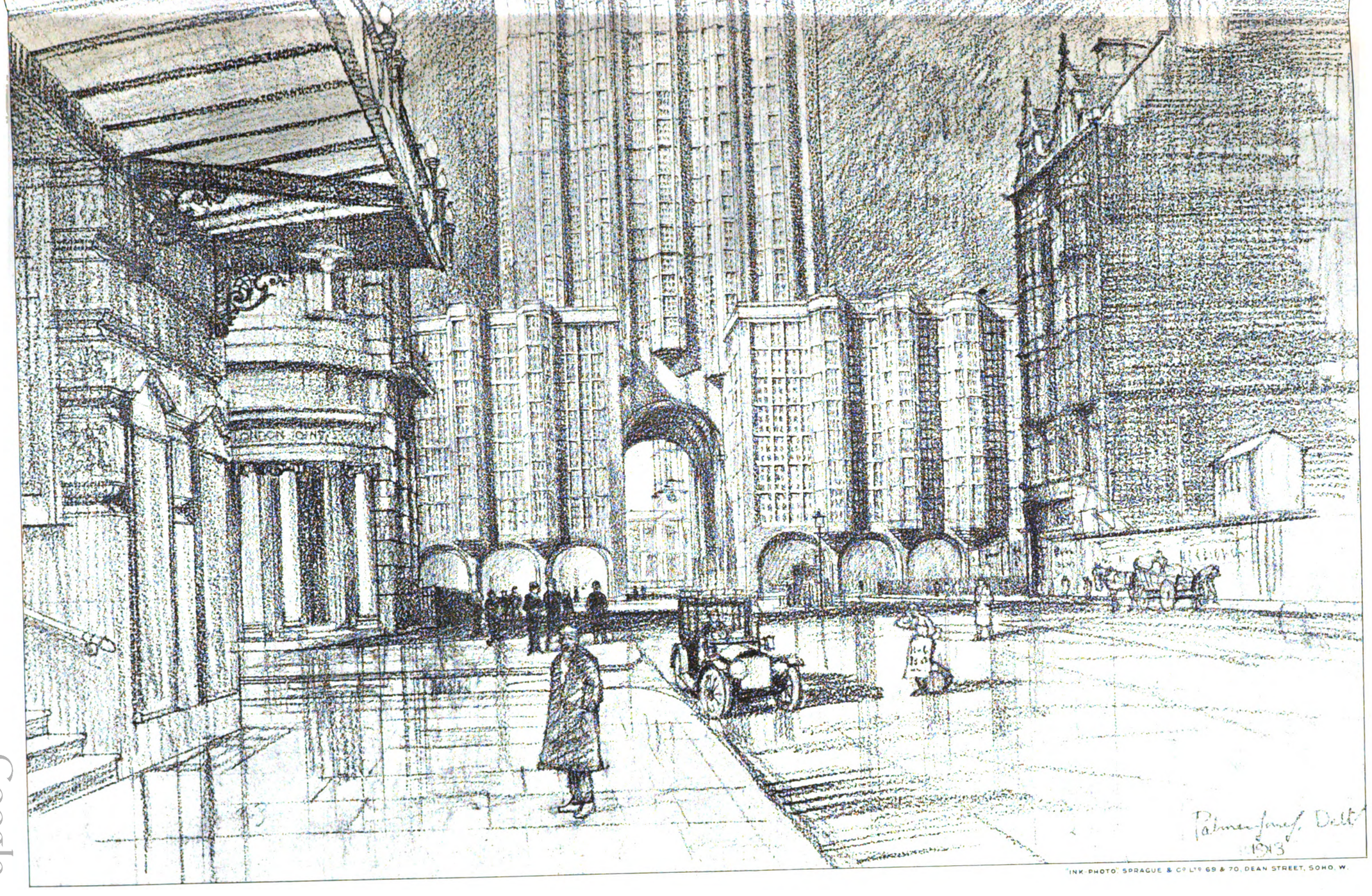
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DOMINION HOUSE, FROM THE KINGSWAY.

MR. A. RANDALL WELLS, Architect.

(Royal Academy Exhibition, 1914.)

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the walls are actually pulled down. The alternative which the author suggests, and which has always been found effective, is to render in cement and sand, instead of the usual lime plaster, all the ground-floor walls and partitions.

Floors Below Ground Level.—In the author's district, owing to its very hilly nature, a large number of the houses have their floors below the ground on two or three sides. In all such places cavities placed either internally or externally should be insisted upon.

Conveniences.—Every dwelling should be provided with a separate convenience, though here care must be taken to see that (in the case of older parts where probably one or two conveniences serve for a number of houses) the conditions for the houses not under consideration are not made worse by the owner disallowing the use of one of the conveniences to others so as to provide one separate for the house under consideration.

Air Space.—This is probably one of the most contentious items in connection with the reconstruction of old property, but the author considers that the minimum of 150 square feet at the rear should be required in all cases, for even with this minimum it is possible to have as many as fifty houses to the acre. If this cannot be obtained, no scheme of reconstruction should be considered.

Height of Rooms.—This is generally found to be another matter on which building owners are reluctant to move; but, without exception, no rooms should be agreed to which are less than 8 feet in height. In every case where an additional room is added the height required by the building by-laws should be insisted upon. In the author's district by-laws are in force which specially require this.

Damp Walls.—Where the walls show signs of non-resistance to the penetration of rain, the two sides exposed to the severest weather should be cemented.

Windows.—In all cases every window ought to be made to open, and should be enlarged where necessary in order to secure the Model By-laws minimum. The author finds that in many circumstances even this is too little.

We now come to the question of providing new houses, which must be built either by private enterprise or the local authority. In the author's town some considerable steps have been taken by the authority to encourage private enterprise by adopting the Small Dwellings Acquisition Act, under which any local authority can borrow money for the purpose of lending to any person who desires to purchase a house for the purpose of dwelling in it himself.

To make the Act well known as well as popular proved to be quite a difficult matter, and it was only by eventually circularising the local builders, and later the inhabitants, that a move was made, and in the result the author has valued during the last two years about forty new dwellings having an approximate value of £10,000.

But while this Act provides the means of greatly assisting the thrifty worker to become the owner of his own house, it does not in any way affect the demand for increased housing accommodation, and most authorities are faced with the prospect of large housing schemes, and of having to continue promoting schemes in the future, for without doubt municipal housing has come to stay.

Since the number of authorities embarking on housing schemes is very much on the increase, it would be well, seeing that all work has to be executed under the same Acts, if some definite ideas were agreed upon and adopted with a view to placing all new schemes as far beyond the possibility of slumdom as means and circumstances would allow, and if a real attempt were made to achieve the ideal instead of the usual tendency to anticipate the realisation of the oft-repeated story of wonderful five or six roomed workmen's houses, with all appurtenances, &c., at £100 or less (said to be possible by some would-be housing expert), better housing would result. It is really astonishing how regularly the £100-house story appears and the credence which is given to it by intellectual men, a fable which the author anticipates, will soon be relegated to Andersen's or Grimm's fairy book. Such houses may have been possible two or three decades ago; to-day they are as remote as the Millennium.

Now the author considers an excellent lead to authorities has been given by the promoters of several of the garden village schemes, and he is of the opinion that good serviceable and attractive workmen's houses can be erected under the present Housing Acts embodying the best features of modern garden city dwellings, having environments both pleasing and practicable in character, and capable of being let at a rental quite within reach of those people for whom they are intended. If all local authorities would but realise this, instead of laboriously copying the speculative builder, their schemes would be more likely to meet with public approbation than is the case at the present time.

Consider what should be embraced by a suitable scheme under the Housing Acts. In the first place every effort should be made to prevent the new being contiguous to the old. The higher-lying ground should be selected in preference to the lower, and if in a valley having steep sides, such as are peculiar to Wales, let the site be on the northern side.

The number of houses to an acre should not exceed twelve, and in a block form. When the latter is effected it is unnecessary to construct back streets, which, of course, account for a considerable expense. Complete privacy should be secured for every house (1) by arranging that the external doors are as far apart as possible, and (2) by erecting a short wall between every house at the rear, so that operations may be carried on at the rear of the dwellings without being casually observable from the house adjoining.

Rooms.—Vary the number of rooms per house, and provide a parlour, if possible, which can be used as an auxiliary bedroom. In a recent inspection of the houses he had erected without parlours, the author found that no less than 70 per cent. of the tenants were living in the scullery, they having converted their large living-rooms into parlours.

Windows.—None should be less than one-sixth the floor area, and all should be made to open: the ordinary sash windows are much more serviceable and satisfactory than the casement.

Drains.—The branch drains to the main branch should be as short as possible, and intercepting traps should be avoided, and ventilation pipes always carried up above the main roof.

Ashbins.—Provide every house with a covered portable ashbin, and renew when necessary. It is the most effective way of securing healthful conditions in this department.

Bath, &c.—Provide every house, however small, with a bath, which seems to be generally favoured on the ground floor. Of course, a bath means hot water, and this can be most economically provided by means of a simple combination arrangement. For the houses in South Wales, where hot water is required for the miner's daily bath, the author found the "Model Cottager" to be an excellent contrivance.

Cupboards.—Provide at least one cupboard upstairs and two downstairs, in each case reaching from the floor to the ceiling.

Back Additions.—These should not be permissible unless kept less in width than one-third of the frontage, and in depth less than one-third of the depth, of the main building.

Generally.—Other matters of construction are largely a question of taste or by-laws.

Regarding the appearance, disposition, and environment of the houses, it is here that the least attention is given and here that the most is needed. Vary, as far as reasonable, both the distance from the street and external treatment of the blocks in order to avoid that monotony so common to the work of speculative builders. Do not forget that the backs of the houses always form an elevation from some point, and generally deserve as much consideration as the front. Avoid the stereotyped brick forecourt walls and rails, and plant instead suitable privets, and, in order to give some encouragement to the incoming tenants, plant a few shrubs in the privet encircled forecourt. In all the spaces between the blocks plant a larger tree of the evergreen type, so as to break to the eye the continuity of the blocks. Where larger spaces occur rail these in and plant with suitable shrubs, and, along with spaces between blocks, reserve for attention by the authority Do not forget the children, and if you cannot provide a large open space in the middle of your colony of houses which can be viewed from every house provide one somewhere else; but provide it. Lastly, provide sufficient ground for vegetable growing by the tenants, either in connection with the houses or in the form of allotments contiguous to their dwellings.

The author has recently carried out a scheme of 136 dwellings of a small type which embodies all the foregoing features, and as the balance-sheet he provided to the Local Government Board gives some indication of what was done, and may be of interest, it is appended.

Balance Sheet.

RECEIPTS.

	£	s.	d.
From rents—			
123 houses at 5*s.* 6*d.*....	1,758	18	0
13 houses at 4*s.* 9*d.*....	160	11	0
	£1,919	9	0
Less 5 per cent for empties	95	19	6
	£1,823	9	6

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B.—In respect of buildings, £2,164 for 60 years	868	9	9
C.—In respect of sewers and water for 30 years			
D.—In respect of street works, £1,425 for 20 years	100	5	3
Rates, 123 at £8, less 50 per cent. G.D.R.; rates, 13 at £7, less 50 per cent. G.D.R.	67	3	9
Rates, 123 at £8, less 30 per cent. P.R.; rates, 13 at £7, less 30 per cent. P.R.	181	17	1
Insurance average for 7 years	14	5	0
Bath and water rates, 123 at 21s., 13 at 22s. 4d	162	2	4
Allowance for repairs, £1 per house	136	0	0
Supervision and collection at 4 per cent. (actual cost)	76	15	7
Balance...	107	14	3
	£1,823	9	6

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Lower Stondon.—House, for Mr. R. Parrett.

BUCKINGHAMSHIRE.

Aylesbury.—Building, for the Bifurcated Rivet Company.

Bierton.—C.E. School: alterations and improvements.

Buckingham.—Cottage, Claydon Park, for Sir H. Verney, Bart., M.P.

North Marston.—House, for Mr. E. L. Dudley.

CHESHIRE.

Birkenhead.—Junior Council school, Wallasey, for 120 places.

Macclesfield.—Isolation hospital, The Moss (£8,700).

Middlewich.—Council school, Elton (£4,400).

Nantwich.—Nantwich and Acton Grammar School (£12,450).

CORNWALL.

Launceston.—Workmen's cottages, Chapel.

Mullion.—Six Council houses (£1,200), for Helston R.D.C.

Redruth.—"Red Lion" Hotel: additions.

DERBYSHIRE.

Kilburn.—Council school (£6,000).

DEVON.

Exeter.—Proposed smallpox hospital, St. Thomas.

Okehampton.—Proposed children's home, for B.G.

Sidmouth.—Proposed Council school.

DORSET.

Portland.—Council offices (£4,450).

Block of offices. Messrs. Petter & Warren, A.R.I.B.A., architects, Church Street, Yeovil.

Weymouth.—Garage, Horsford Street. Messrs. Crickmay & Sons, F.R.I.B.A., architects, 49 St. Mary's Street.

DURHAM.

Birtley.—Public elementary school for 800 places.

Gateshead.—Shipley Art Gallery, Prince Consort Road (£25,000). Mr. A. Stockwell, architect, 11 Pilgrim Street, Newcastle-on-Tyne (also at Gosforth). Messrs. Lowry, contractors, Corporation Street, Newcastle.

ESSEX.

Leyton.—County High School for boys.

Nayland.—Sanatorium, Highland Farm, for Middlesex C.C.

GLOUCESTERSHIRE.

Ampney-Crucis.—Pair of cottages, for Cirencester R.D.C. Mr. V. A. Lawson, architect.

Bitton.—Eight Council houses, for Warmley R.D.C. Council surveyor.

Daglingworth, Fairford, Siddington, and South Cerney.—Pair of cottages at each place, for Cirencester R.D.C. Mr. V. A. Lawson, architect.

HERTFORDSHIRE.

Letchworth.—Eight cottages, Cowper's Piece, for the Howard Cottage Society; also Sixteen cottages, Spring Road.

Watford.—Working-class dwellings (£20,300).

Willian Way.—Two cottages, for Miss Lawrence.

KENT.

Ashford, East.—Children's homes, for B.G. Mr. A. E. Lacey, A.R.I.B.A., architect, 13 North Street.

Faversham.—Cottage homes, for B.G.

Lydd.—Council school: alterations (£500).

Sevenoaks.—Isolation hospital: extension (£2,500).

LANCASHIRE.

Cleveleys.—Two houses, Cleveleys Avenue, for Mr. S. Turner.

Coppull.—Council school. Messrs. Baxendale Brothers, contractors, Victoria Saw Mills, Chorley.

Fleetwood.—Two houses, Abercrombie Road, for Mr. T. L. Urmiston.

Two houses, Poulton Road, for Mr. E. W. Lewis.

Shop, Wyre Dock, for Mr. R. Barrow.

Irlam.—Two houses, Victoria Road, for Mrs. C. A. Gascoigne.

Withington.—Children's hospital, for South Manchester Guardians.

MIDDLESEX.

Harrow.—Proposed Council school, Greenhill Crescent.

Hounslow.—Tuberculosis hospital and dispensary (£1,500).

NORFOLK

Erpingham.—Children's home. Mr. F. Scott, architect, 24 Castle Meadow, Norwich.

Fakenham.—Twenty-six houses, for Walsingham R.D.C. (£5,200). Mr. G. Page, architect.

NORTHUMBERLAND.

Bellingham.—Council school, Ridsdale, for County Education Committee.

Scotswood.—St. Margaret's Church (£3,500).

NOTTINGHAMSHIRE.

Warsop.—Council school for 600 places.

SHROPSHIRE.

Wellington.—House, Millfields: additions, for M.. A. Jones.

SOMERSET.

Midsomer Norton.—Eight cottages, Westfield. Mr. S. Smith, builder, Radstock Road.

Villa, Linton Road, for Mr. H. Tovey.

STAFFORDSHIRE.

Tamworth.—Sixty-seven Council houses, Bradford Street.

SUFFOLK.

Ipswich.—Isolation hospital, Foxhall Road: temporary pavilions. Mr. J. Mead, Borough surveyor.

SURREY.

Ash Vale.—Council School: enlargement for additional fifty places.

Effingham.—Workmen's cottages, for Dorking R.D.C.

Merton, East.—Proposed Council school, High Path.

Sutton.—Proposed secondary school for girls.

WARWICKSHIRE.

Foleshill.—House, King George's Avenue, for Mr. T. W. Roulston.

WORCESTERSHIRE.

Kidderminster.—Homes for the aged poor, for B.G.

YORKSHIRE.

Dewsbury.—Public elementary school, Ravensthorpe.

Guisborough.—Workhouse: reconstruction.

Huddersfield.—College: extension and alterations.

Girls' High School: extension.

St. Joseph's and St. Patrick's R.C. Schools: extensions.

Selby.—Council houses, Flaxley Road.

WALES.

Barmouth.—Old Post Office and Bank: alterations. Council Offices, &c.

Llandough.—Proposed hospital (£83,400), for Cardiff B.G.

Llanrug.—Council school, for Carnarvonshire C.C. Mr. R. Ll. Jones, architect, 14 Market Street, Carnarvon.

SCOTLAND.

Banff.—Picture house, Bridge Street, for the Banff Picture House Company, Ltd. Mr. George Sutherland, A.R.I.B.A., architect, 26 Crown Street, Aberdeen.

Dumbarton.—Combination Poorhouse: proposed rebuilding.

Dundee.—Board school. Mr. J. H. Langlands, architect, 31 Murraygate.

Montrose.—Academy: proposed extension (£5,000).

Motherwell.—Hall, Milton Street, for United Orange Lodges. Mr. W. L. Dyer, architect, Lochhead Place.

Stirling.—Municipal buildings.

IRELAND.

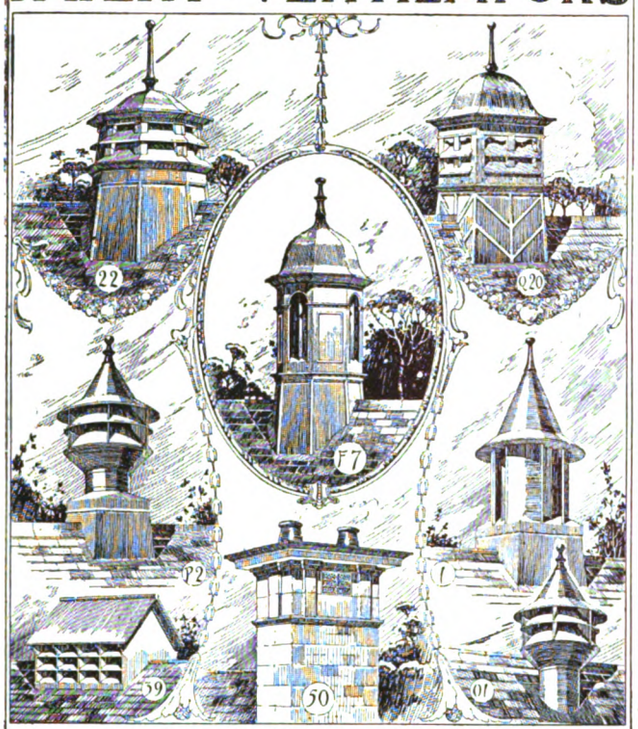
Gransha.—Derry Lunatic Asylum: proposed extensions (£2,500).

Newry.—Proposed isolation hospital, Rough Island Fathom.

Wicklow.—Proposed steam laundry, for the Distress Committee.

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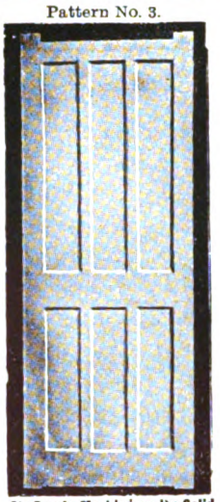
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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 1, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1s., which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

DONCASTER.—Jan. 23.—The Town Council invite architects to submit designs for the laying out of a site of about twenty acres at Carr House, Doncaster, and the erection of 102 workmen's dwellings on four acres thereof on Garden City lines. Copies of the particulars and conditions of the competition may be obtained at the office of Mr. R. A. H. Tovey, Town Clerk, Doncaster.

LIVERPOOL.—Feb. 8.—The Corporation invite designs for workmen's dwellings, to accommodate about 500 persons, and proposed to be erected on the site known as the Rathbone Street area. Premiums of £100, £50 and £25 respectively are offered for the first three selected designs, and the Council have appointed Mr. Henry Hartley, F.R.I.B.A., as assessor. The first premiated design will become the property of the Corporation. A plan of site, together with a copy of the printed conditions and instructions, will be forwarded to the applicant on payment of a deposit of £1 1s., which will be returned on the receipt of a bona-fide set of drawings. Mr. E. R. Pickmere, town clerk, Municipal Offices, Liverpool.

MACCLESFIELD.—Jan. 31.—The Lands and Town Development Committee invite competitive plans, &c., for a housing scheme from the local architects and builders. Plans, specification, and estimate must be deposited not later than January 31, 1915, marked on the outside cover, "Housing Scheme." Mr. S. C. Baggott, Borough Surveyor, Macclesfield.

CONTRACTS OPEN.

ASHTON-UNDER-LYNE.—Jan. 16.—For erection of Mossley Road Council School, to accommodate 600 children, for the Ashton-under-Lyne Education Committee. Deposit £3 3s. Messrs. Eaton, Son & Cantrell, architects, Stamford Street, Ashton-under-Lyne.

BRADFORD.—Jan. 5.—For all trades required in erection of a medical officer's residence at the City Hospital, Bierley Hall, for the Corporation. The City Architect, Town Hall, Bradford.

BRISTOL.—Jan. 11.—For the construction, delivery, and maintenance of a ferro-concrete built tobacco warehouse at Bristol, for the Docks Committee. (Mr. W. W. Squire, engineer, Engineer's Office, Cumberland Road, Bristol.) Send £5 deposit by separate letter to the Secretary of the Docks Committee.

BROMPTON (KENT).—Jan. 5.—For erection of a block of dwellings in Middle Street, for the Gillingham Town Council. Deposit 10s. 6d. Mr. J. L. Redfern, borough surveyor, Council Offices, Gardiner Street, Gillingham, Kent.

COLCHESTER.—Jan. 20.—For erection of tuberculosis pavilion, scarlet-fever ward, and alterations and additions to the administration block at the Infectious Diseases Hospital, Mile End, for the Borough and Port Health Committee. Mr. H. Collins, A.M.I.C.E., borough engineer and surveyor, Colchester.

COLEHAM.—Jan. 12.—For building new classrooms and making other additions and alterations to the Trinity Infants' School, Coleham, for the Shrewsbury Education Committee. Deposit £2 2s. Mr. W. Scott-Deakin, F.R.I.B.A., architect, 12A Pride Hill, Shrewsbury.

COVENTRY.—Jan. 13.—For enlargement of the Frederick Bird Council School, Swan Lane, for the Education Committee. Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry. Send £1 1s. deposit to the Education Office, 44 Bayley Lane, Coventry.

EASTBOURNE.—Jan. 15.—For additions to the Dispensary at the rear of the Town Hall, for the Corporation. Mr. W. C. Field, borough architect and building surveyor, Town Hall, Eastbourne.

EAST HAM.—Jan. 12.—For erection of a dining hall at Napier Road School, East Ham, for the East Ham Education Committee. Send applications and £10 deposit by Jan. 1 to Mr. R. L. Curtis, Committee's architect, 11-12 Finsbury Square, London, E.C.

ENFIELD.—Jan. 13.—For drainage and sanitary work at the Chase Farm Schools, for the Edmonton Guardians. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

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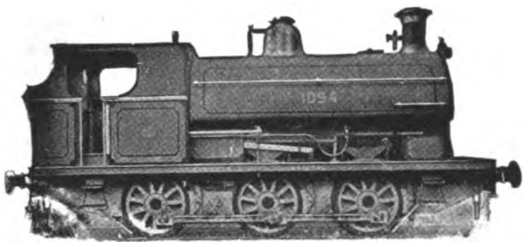
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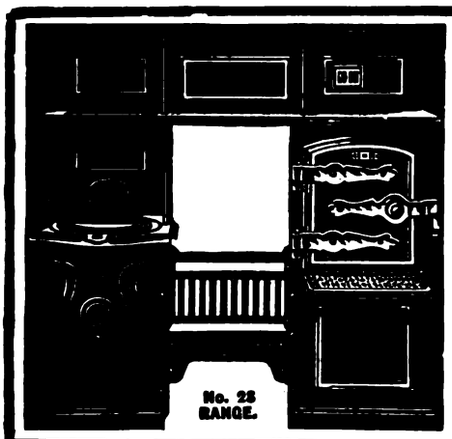


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HERTFORD.—Jan. 11.—For works of alterations and additions to the ambulance shed at the Isolation Hospital, Gallows Hill, for the Hertford and Ware Joint Hospital Board. The Surveyor, Town Hall, Ware.

HESLINGTON.—Jan. 6.—For building a sewage tank, for the Escrick Rural District Council. Mr. Fred T. Penty, architect, Lendal Chambers, York.

IRELAND.—Jan. 6.—For erection of seven labourers' single cottages and fourteen double cottages and fencing plots attached to same, for the Claremorris Rural District Council. The Clerk to the Council, Claremorris.

IRELAND.—Jan. 23.—For the erection and completion of sanatorium, comprising main block, laundry, engine and pump houses, &c., at Rye Hill, near Athenry, co. Galway, for the Sanatorium Committee of the Galway County Council. Mr. W. A. Scott, A.R.H.A., A.R.I.B.A., architect, 45 Mountjoy Square, Dublin.

KEIGHLEY.—Jan. 4.—For tiling at the slipper baths, for the Corporation. Messrs. J. B. Bailey & Son, architects, 3 Scott Street, Keighley.

LEIGH.—Jan. 5.—For the construction of an extension to the existing retort house at Leigh Gasworks, for the Corporation of Southend-on-Sea. Deposit £2 2s. Mr. E. J. Elford, M.I.C.E., borough engineer, Municipal Buildings, Southend-on-Sea.

LEIGH (LANCS.).—Jan. 11.—For erection of 238 cottages, for the Corporation. Mr. T. Hunter, borough engineer, Town Hall, Leigh.

LITTLE HULTON.—Jan. 9.—For extensive alterations and additions to Peel Hall, Little Hulton, to convert the premises into a sanatorium, for the Lancashire Tuberculosis Committee. Deposit £2. Mr. H. Littler, County architect, 16 Ribblesdale Place, Preston.

LONDON.—Jan. 9.—For erection of an addition to the Tate Public Library, Streatham High Road, S.W., for the Wandsworth Borough Council. Deposit £1 1s. Mr. P. Dodd, M.I.C.E., borough engineer, 215 Balham High Road, S.W.

LONDON.—Jan. 12.—For erection of twenty-four houses in Barlby Road, Ladbroke Grove, London, W., for the Great Western Railway. The Engineer, Paddington Station, London.

LONDON.—Jan. 13.—For alterations to sanitary conveniences at the Eastern Ambulance Station, Homerton Grove, Homerton, N.E., for the Metropolitan Asylums Board. Deposit £1. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the Office of the Board, Embankment, E.C.

METHLEY (YORKS.).—Tenders (except for carpenter and joiner's work) are invited for the erection of a villa in Pinfold Lane, for Mr. H. B. Guise, Methley. Mr. T. Thompson, jun., surveyor, &c., Red House, Methley.

NEWPORT.—Jan. 15.—For the erection of additional classrooms at Durham Road School, Newport, Mon., for the Newport Corporation Education Authority. Mr. C. F. Ward, F.R.I.B.A., borough architect, Town Hall. Send £1 1s. deposit to the Borough Treasurer, Town Hall, Newport, Mon.

NOTTINGHAM.—Jan. 4.—For erection of w.c.'s, washhouses, and other improvements to properties in Windsor Street, William Street, Cumberland Street, and Union Road, for the Estates Committee. Deposit £1 1s. Mr. A. Dale, city architect, Guildhall, Nottingham.

OLDHAM.—Jan. 4.—For wood-block flooring for new Council school at Higginshaw, for the Oldham Education Committee. Messrs. Winder & Taylor, architects, Union Street, Oldham.

RAMSGATE.—Jan. 6.—For repairing the shelter on the Government Acre, for the Corporation. Mr. T. G. Taylor, borough engineer, Ramsgate.

SCARRINGTON.—Jan. 6.—For erection of six workmen's dwellings, in three pairs, together with out-offices, &c., at Scarrington, within their district, for the Bingham Rural District Council. Deposit £2 2s. Mr. C. W. Kendrick, sanitary surveyor, Bingham, Notts.

SCOTLAND.—Jan. 4.—For taking down and re-erecting cottage at Seabraes, for the Dundee Town Council. Mr. J. Thomson, city engineer, 91 Commercial Street, Dundee.

SCOTLAND.—Jan. 5.—For erection of proposed building for the treatment of waste paper at the destructor, Powderhall, for the Edinburgh Corporation. Mr. J. A. Williamson, A.R.I.B.A., Public Works Office, City Chambers.

SOUTHSEA.—Jan. 18.—For erection of a public elementary school in Meon Road, Southsea, for the Portsmouth Education Committee. Deposit £3 3s. Mr. A. E. Cogswell, architect, Prudential Buildings, Portsmouth.

SELBY.—Jan. 11.—For the construction of public conveniences in the Park, for the Urban District Council. Mr. B. McG. Grey, A.M.I.C.E., Council Offices, Selby.

SHEFFIELD.—Jan. 18.—For the widening of High Bridge, Penistone Road, partly in the city of Sheffield and partly in the rural district of Wortley, for the City Council. Deposit £1. The City Engineer, Town Hall, Sheffield.

SHORTLANDS (KENT).—Jan. 15.—For the construction of pumping-station buildings and other contingent works at Shortlands, for the Metropolitan Water Board. The Chief Engineer's Department, Savoy Court, Strand, W.C. Send £10 deposit to the Accountant to the Board, Savoy Court, Strand, W.C.

TEIGNMOUTH.—For erection of two ranges of stabling for the Royal 1st (R.) Devon Yeomanry, Teignmouth, at Trafalgar Square Field (each range to hold about 80 horses). The Adjutant, Royal 1st (R.) Devon Yeomanry, 14 Powderham Terrace, Teignmouth.

WADSLEY.—Jan. 14.—For erection of workshops at the West Riding Asylum, Wadsley, near Sheffield. Send £1 deposit by separate letter to the Treasurer to the Board, West Riding Asylum, Wakefield. Mr. W. E. H. Burton, A.M.I.C.E., architect to the Board, West Riding Asylum, Wakefield.

WALES.—For erection of a Council school at Dolgelley, for the Merioneth Education Committee. Messrs. Deakin & Howard Jones, M.S.A., county architects, Plas Ynys, Borth, R.S.O.

WALES.—For the rebuilding of "Woodside," The Grove, Merthyr Tydfil, for Mr. J. T. Vaughan. Mr. O. P. Bevan, P.A.S.I., architect, Express Chambers, Merthyr Tydfil.

WALES.—Jan. 6.—For the following work, for the Glamorgan County Council: (1) erection of new mixed school at Glyncorrwg; (2) erection of new infants' school at Glanynant, Whitchurch; (3) erection of new infants' school at Porthcawl; (4) erection of new school at Hendreforgan, near Gilfach Goch; (5) caretaker's cottage at Porth Intermediate School for Girls; (6) forming hockey ground at Porth Intermediate School for Girls; (7) closing in covered way at Barry Training College; (8) levelling playground and alterations at Abertridwr School; (9) erection of domestic science building at Caerphilly H.E. School. The Glamorgan County Hall, Cardiff.

WALES.—Jan. 11.—For erection of new hotel (Dunraven Arms), Cwmgwrach, Glyn-Neath, for Mr. E. Evans-Bevan. Mr. J. C. Rees, M.S.A., architect, Parade Chambers, Neath.

WALES.—Jan. 12.—For erection of a station at Porthcawl, Glam., for the Great Western Railway. The Engineer at Newport Station.

WORKINGTON.—Jan. 12.—For erection and fitting up of a bathroom at Lawrence Street Schoolhouse, and for various small alterations to the premises in connection therewith, for the Education Committee. The Borough Surveyor's Office, Workington.

TENDERS.

BARNSLEY.

For the erection of Agnes Road new Council infants' school and the alteration of existing premises, for the Education Committee. Mr. E. W. DYSON, architect, Barnsley.

Accepted tenders.

C. D. Potter, mason	£1.710 0 0
J. S. Teanby & Son, Sheffield, joiners	941 11 0
Ed. Broley, plumber	440 0 0
T. Lindley, plasterer	177 0 0
H. Cersey, slater	120 0 0
T. & L. Stephenson & Sons, painters	85 0 0

The rest of Barnsley.

BLACKWOOD (MON.).

For the erection of new offices and agent's house at Blackwood, for the Tredegar Branch of the South Wales Miners' Federation. Mr. D. J. THOMAS, M.S.A., architect, Blackwood, Mon. Quantities by architect.

Lloyd & Hopkins	£3.056 16 3
Rees Edwards	2,860 0 0
Richard Jones	2.725 0 0
E. Walters & Son	2,710 0 0
Osborne Newcombe	2.700 0 0
Williams & Sons	2.696 0 0
A. S. Morgan	2.650 0 0
J. F. Howells	2.500 0 0
PASSMORE & PERKINS, Pontllanfraith (*accepted*)	2,450 0 0
Public Works Construction Co., Ltd.	2,399 0 0

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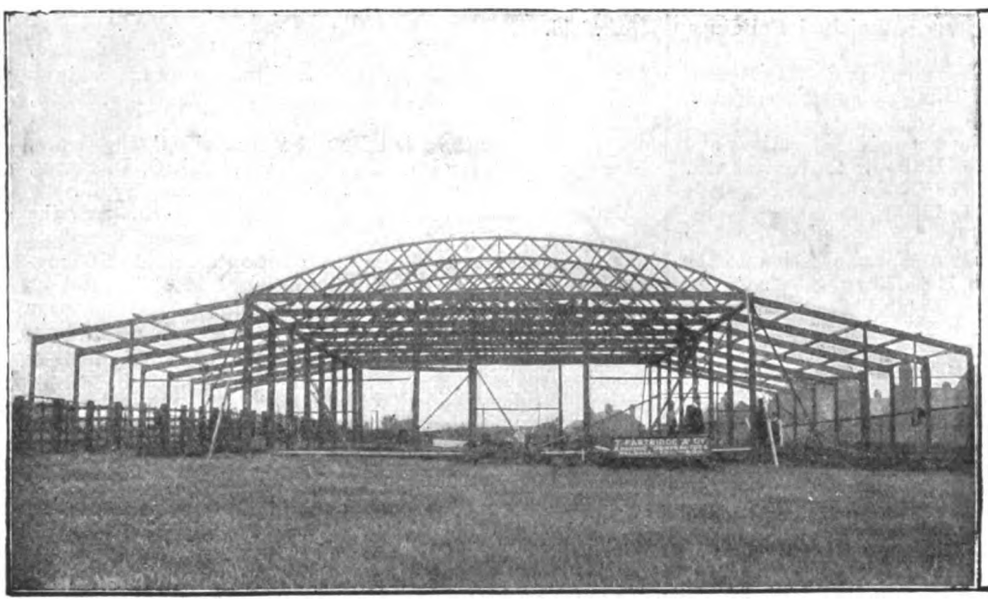
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BARNET.

For the erection of an infirmary at Wellhouse Lane, for the Guardians of Barnet Union. Messrs. WILLIAMS & COX, architects, 34 Henrietta Street, Covent Garden, W.C. Quantities by Mr. Robert J. Smellie.

Foundations.

Willmott & Sons	£3,025	0	0
Saunders	3,203	0	0
Myall Bros.	3,000	0	0
Rowley Bros.	3,454	0	0
Allen Fairhead & Son	3,586	0	0
Miskin & Sons	3,400	0	0
Henson & Son	3,396	18	8
Rodhouse & Son	3,711	19	0
Whiter & Co.	3,479	0	0
Thomas	3,336	7	11
Lavington, Ltd.	3,785	0	0
Moss	3,543	9	3
F. & H. F. Higgs	3,825	0	0
Heath & Son	3,387	2	8
Pavey & Armitage	3,609	10	0
Brightman & Son	3,527	0	0
Peppiatt & Cooper	3,717	18	10
Drever & Son	3,649	13	0
Higgs & Hill, Ltd.	4,084	0	0
Lawrance & Sons	3,943	0	0
Symes	3,804	0	0
Battley, Sons & Holness	3,922	0	0
Roberts & Co.	3,830	0	0
Crossley & Son	4,270	0	0

Superstructure.

Willmott & Sons	£20,500	0	0
Saunders	20,330	0	0
Myall Bros.	20,601	0	0
Rowley Bros.	20,394	0	0
Allen Fairhead & Son	20,639	0	0
Miskin & Sons	21,039	0	0
Henson & Son	21,126	3	9
Rodhouse & Son	21,879	17	8
Whiter & Co.	21,140	0	0
Thomas	21,355	4	7
Lavington, Ltd.	20,922	0	0
Moss	21,169	10	6
F. & H. F. Higgs	21,323	0	0
Heath & Son	21,816	19	11
Pavey & Armitage	21,800	0	0
Brightman & Son	22,011	0	0
Peppiatt & Cooper	21,913	11	6
Drever & Son	22,093	0	3
Higgs & Hill, Ltd.	21,808	0	0
Lawrance & Sons	21,966	0	0
Symes	22,180	0	0
Battley, Sons & Holness	22,184	0	0
Roberts & Co.	22,900	0	0
Crossley & Son	22,900	0	0

CHURWELL.

For the formation of a reservoir (to be constructed in brick) at Millshaw Leatherworks, Churwell, near Leeds, for Messrs. W. L. Ingle, Ltd. Mr. T. A. BUTTERY, Licentiate R.I.B.A., architect and surveyor, Morley and Leeds.

HARRISON SPENSLEY, Morley (*accepted*)	£380	3	4

ROCHDALE.

For the erection and completion of an extension to the Technical School in Church Lane, for the Education Committee. Mr. P. W. HATHAWAY, A.R.I.B.A., architect, Rochdale. Quantities by P. W. Hathaway, A.R.I.B.A.

R. & T. HOWARTH, 159 Royds Street, Rochdale (*accepted*).

SCOTLAND.

For the extension of Knightswood Hospital, for the Glasgow Corporation.

Accepted tenders.

Wm. Anderson, brickwork	£10,308	18	0
Matthew Henderson, Ltd., joiner	8,522	3	1
J. L. Arnot, plumber	3,410	1	3
Wemyss & Livingston, plasterer	1,575	10	3
M. Bertram, slater	974	4	9
J. Lindsay & Son, painter	895	11	5

SYSTON.

For the erection of the Syston handicraft centre, for Leicestershire County Council Education Committee. Mr. E. G. FOWLER, architect, Leicester.

Chitham & Co.	£629	10	0
Bowles & Son	629	0	0
Fox	625	0	0
Kellett & Son	625	0	0
Corah & Son	619	17	0
Haycock Bros.	612	0	0
Haddon & Son	603	0	0
J. & R. Agar	591	9	0
Cole & Sons	585	0	0
Sleath	570	0	0
J. MOORE & SON, Syston (*accepted*)	560	0	0

WALES.

For the erection of a school for boys at Hawthorn, for the Pontypridd Education Committee. Mr. W. E. LOWE, engineer and surveyor to the Council, Pontypridd.

Knox & Wells	£6,834	17	4
Evans & Bros.	6,587	14	10
D. Davies & Sons	6,477	0	0
Jones Bros.	6,350	0	0
Hamilton & Millard	6,327	0	0
Julian	6,285	0	0
W. J. Davies	6,195	5	8
Harris	6,143	12	4
R. Jones	5,900	0	0
Howells	5,890	0	0
W. SHAIL (LLANDAFF), LTD., Llandaff, Cardiff (*recommended*)	5,800	0	0
Surveyor's estimate	5,800	0	0

For erection of a Council school buildings at Tenby, for the Pembrokeshire Education Authority. Mr. O. T. THOMAS, architect, Haverfordwest.

W. H. PHILLIPS, Tenby (*accepted*)	£5,675	0	0

YORK.

For the erection of twenty-eight cottages on the Fulford Field House Estate, for the Corporation. Mr. F. W. SPURR, city engineer, York.

W. BIRCH & SONS, LTD., York (*accepted*)	£7,374	6	4

DURING 1913 building and constructional material to the value of £2,169,702 was imported into South Africa. This total shows an increase of over £250,000 for the previous twelve months.

THE election of the Executive Councilmen for the Amalgamated Society of Carpenters and Joiners has been completed in three districts and the result announced as follows: No. 1, S. Hunter, Manchester; No. 2, F. Wolstencroft, Royton and Shaw; No. 3, A. A. Holgate, Leeds. The result of the election of delegates for the Labour party conference is: No. 1, J. Bond, Edinburgh; No. 2, C. Hill, West Hartlepool; No. 3, M. Allonby, Salford; No. 4, A. G. Cameron, Paddington; No. 5, E. H. Jarvis, Bristol; No. 6, R. Waugh, Bristol.

THE Scarborough Corporation have applied to the Local Government Board for a Provisional Order to partially repeal, alter, or amend the Scarborough Corporation Act, 1900: To empower the Corporation to borrow, with the sanction of the Local Government Board, money for the purpose of constructing sea-water swimming and other baths, and to advance by way of loan to the Scarborough Harbour Commissioners money in addition to the £20,000 which they are authorised by Section 65 of the said Act to lend. The Corporation have also made application for sanction to borrow not exceeding £10,000 for the construction of a bathing-pool and the erection of conveniences in connection therewith in the North Bay.

AT the annual meeting of the Bradford Master Builders' Association reference was made to the great loss to the Association by the death of its late president, Councillor J. W. Sugden. The following officers were elected: President, Mr. E. Smethurst; Vice-Presidents, Messrs. E. J. Fearnley and R. H. Clark; Treasurer, Mr. W. F. Farnish. The late President, shortly before his death, invited members to forward subscriptions to the Lord Mayor of Bradford's War Relief Fund. Most of the members had already contributed in their private capacity, but, as a token of esteem and tribute of respect to the memory of the late president, several subscriptions have been received, and the treasurer was instructed to send £50 to the Lord Mayor's Fund from the Association.

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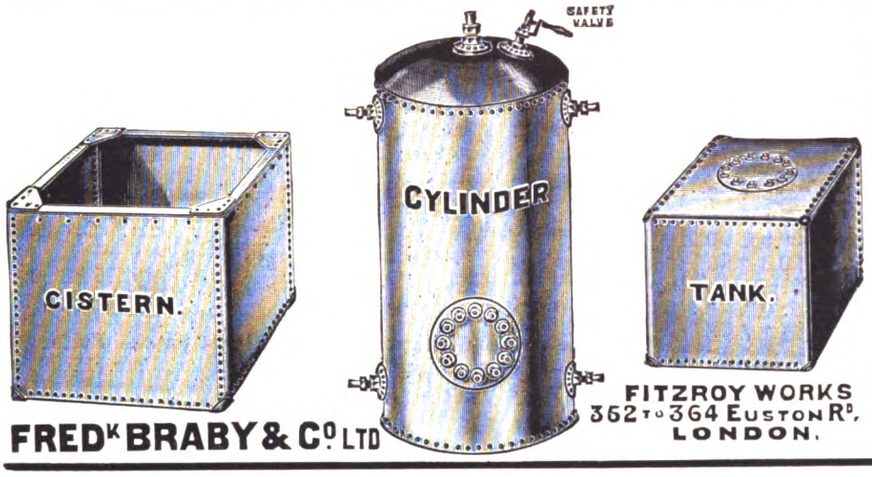
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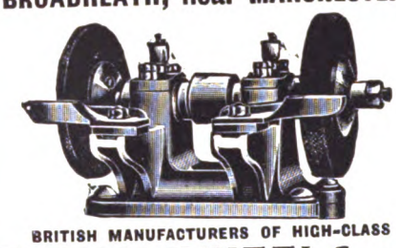
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LONDON MASTER BUILDERS' ASSOCIATION ANNUAL REPORT.

THE following report dealing with the work of the L.M.B.A. from February 1914 to December 1914 was presented at the recent forty-third annual general meeting of the London Master Builders' Association, an account of which appeared in our issue of December 25:—

State of the Building Trade.—During the period from the end of January 1914 until the middle of August building operations were greatly disorganised in consequence of the trade dispute.

Since the outbreak of war business has necessarily suffered to a considerable extent with respect both to work delayed by the dispute and by preventing new contracts from being entered into.

Parliamentary.—Parliamentary matters have had the careful attention of the Employers' Parliamentary Council.

Legal Cases.—Careful consideration has been given to cases in which members of the Association were interested, and in certain instances financial assistance rendered.

Condensed summaries of legal cases in which important points were raised during 1914 will be found reported in the Handbook for 1915, pp. 120-26.

Relations with the Workmen.—The negotiations with the operatives' societies, which were unsuccessful and culminated in the stoppage of work on January 24 last, referred to in the previous report, eventually led to your Association seeking the support of the National Federation, as the matter was one of national interest. Frequent meetings of all parties were held, and ultimately, at the half-yearly meeting of the National Federation, held at Cardiff in July, a resolution was carried declaring the intention to lock out members of such societies as had not come to terms on or before August 15 following.

On August 6, at a Conference with the Administrative Committee of the National Federation, held at the request of various General Executives of Unions, the terms last submitted by your Association were accepted with the understanding that four points should later be submitted to the Augmented National Conciliation Board for final decision.

It is probable that the sudden outbreak of war had some influence upon the question of settlement, but it had already been made quite clear to the various operatives' societies affected that employers in all parts of the kingdom were determined to maintain the inviolability of agreements.

The Augmented National Conciliation Board met on October 13 to consider the four points referred to it for its decision, and passed the following resolutions:—

1. *As to Disability.*—That both parties join the National Conciliation Board and come under the procedure of the Board, and until that takes place or the present agreement is terminated by due notice, the rules suggested by the L.M.B.A. remain in operation.

2. *As to Foremen.*—That Rule 1 of the General Rules agreed between the National Federation of Building Trades Employers of Great Britain and Ireland, the National Association of Master Plasterers, and the National Association of Operative Plasterers, modified to suit the respective trades, be substituted for the rule as to foremen in the existing working-rule agreements.

3. *As to Timbermen.*—That the rate for timbermen remain at 8½*d.*

4. *As to Overtime Rate for Labourers.*—That the rule as signed remain in force.

The valuable assistance of the National Federation above referred to was recognised by your Council on October 15 in the following unanimous resolution:—

"That the L.M.B.A. tender their hearty thanks to the Executive Council and officers of the National Federation for their co-operation and assistance freely rendered during the continuance of the London trade dispute, January-August 1914, whereby that dispute has now been brought to a conclusion. The L.M.B.A. desire that this appreciation shall be conveyed to the various Federations, branches, and officials."

Your Council also acknowledges the support accorded by the London Master Plasterers' Association, and notes with satisfaction the affiliation of that body to the L.M.B.A.

Frequent Conferences with the Operative Painters' Society have been held, but no agreement has been arrived at, although a rate of 9½*d.* per hour for decorators and 9*d.* for painters was offered.

Revision of Rules.—In view of the manifest importance of ensuring continuity in the conduct of affairs during the dispute, the usual procedure under Rule IV. as to election of officers and the requisite members of the Executive Council was postponed, and ultimately, on June 22, at a special general meeting, alterations were duly made to the rules in order to deal more particularly with the question of the officers. At this meeting the four officers were invited to retain their positions, to which they consented, and the new Executive Council was duly elected, the members of which will retain their seats until December 31, in accordance with the revised rule.

In future a half-yearly general meeting will be held in June each year for the purpose of the presentation of the audited accounts for the preceding year ending December 31, and of the half-yearly report of the Council.

Organisation.—The importance of reorganisation, more especially with a view to increasing the power of defending legitimate interests, has engaged, and is engaging, the attention of a special committee, which will in early course make a recommendation to the Council for consideration. It is hoped that some plan will be adopted that will have the effect of still further increasing the membership of the Association.

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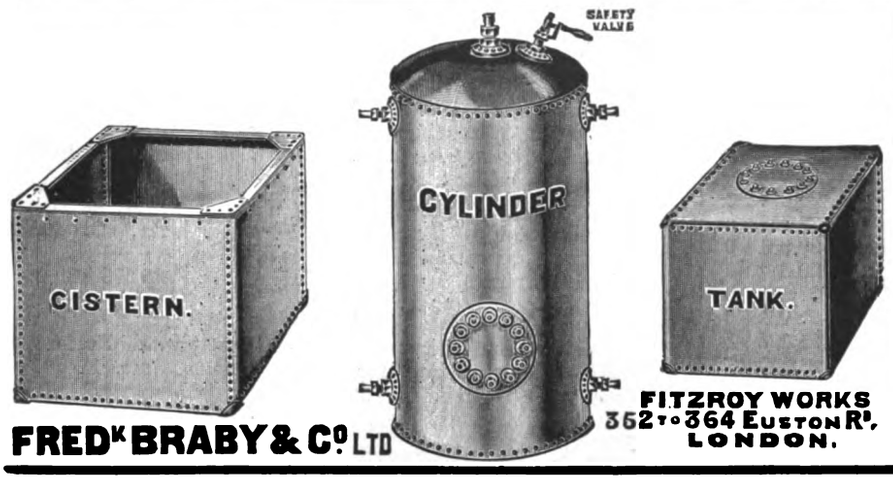
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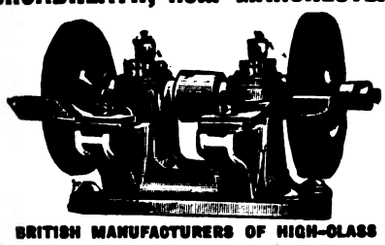


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LONDON MASTER BUILDERS' ASSOCIATION ANNUAL REPORT.

THE following report dealing with the work of the L.M.B.A. from February 1914 to December 1914 was presented at the recent forty-third annual general meeting of the London Master Builders' Association, an account of which appeared in our issue of December 25:—

State of the Building Trade.—During the period from the end of January 1914 until the middle of August building operations were greatly disorganised in consequence of the trade dispute.

Since the outbreak of war business has necessarily suffered to a considerable extent with respect both to work delayed by the dispute and by preventing new contracts from being entered into.

Parliamentary.—Parliamentary matters have had the careful attention of the Employers' Parliamentary Council.

Legal Cases.—Careful consideration has been given to cases in which members of the Association were interested, and in certain instances financial assistance rendered.

Condensed summaries of legal cases in which important points were raised during 1914 will be found reported in the Handbook for 1915, pp. 120-26.

Relations with the Workmen.—The negotiations with the operatives' societies, which were unsuccessful and culminated in the stoppage of work on January 24 last, referred to in the previous report, eventually led to your Association seeking the support of the National Federation, as the matter was one of national interest. Frequent meetings of all parties were held, and ultimately, at the half-yearly meeting of the National Federation, held at Cardiff in July, a resolution was carried declaring the intention to lock out members of such societies as had not come to terms on or before August 15 following.

On August 6, at a Conference with the Administrative Committee of the National Federation, held at the request of various General Executives of Unions, the terms last submitted by your Association were accepted with the understanding that four points should later be submitted to the Augmented National Conciliation Board for final decision.

It is probable that the sudden outbreak of war had some influence upon the question of settlement, but it had already been made quite clear to the various operatives' societies affected that employers in all parts of the kingdom were determined to maintain the inviolability of agreements.

The Augmented National Conciliation Board met on October 13 to consider the four points referred to it for its decision, and passed the following resolutions:—

1. *As to Disability.*—That both parties join the National Conciliation Board and come under the procedure of the Board, and until that takes place or the present agreement is terminated by due notice, the rules suggested by the L.M.B.A. remain in operation.

2. *As to Foremen.*—That Rule 1 of the General Rules agreed between the National Federation of Building Trades Employers of Great Britain and Ireland, the National Association of Master Plasterers, and the National Association of Operative Plasterers, modified to suit the respective trades, be substituted for the rule as to foremen in the existing working-rule agreements.

3. *As to Timbermen.*—That the rate for timbermen remain at 8½*d.*

4. *As to Overtime Rate for Labourers.*—That the rule as signed remain in force.

The valuable assistance of the National Federation above referred to was recognised by your Council on October 15 in the following unanimous resolution:—

"That the L.M.B.A. tender their hearty thanks to the Executive Council and officers of the National Federation for their co-operation and assistance freely rendered during the continuance of the London trade dispute, January-August 1914, whereby that dispute has now been brought to a conclusion. The L.M.B.A. desire that this appreciation shall be conveyed to the various Federations, branches, and officials."

Your Council also acknowledges the support accorded by the London Master Plasterers' Association, and notes with satisfaction the affiliation of that body to the L.M.B.A.

Frequent Conferences with the Operative Painters' Society have been held, but no agreement has been arrived at, although a rate of 9½*d.* per hour for decorators and 9*d.* for painters was offered.

Revision of Rules.—In view of the manifest importance of ensuring continuity in the conduct of affairs during the dispute, the usual procedure under Rule IV. as to election of officers and the requisite members of the Executive Council was postponed, and ultimately, on June 22, at a special general meeting, alterations were duly made to the rules in order to deal more particularly with the question of the officers. At this meeting the four officers were invited to retain their positions, to which they consented, and the new Executive Council was duly elected, the members of which will retain their seats until December 31, in accordance with the revised rule.

In future a half-yearly general meeting will be held in June each year for the purpose of the presentation of the audited accounts for the preceding year ending December 31, and of the half-yearly report of the Council.

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THE LONDON ASSOCIATION OF MASTER DECORATORS.

A MEETING of the Executive Committee was held at the Secretary's office on Monday, the 14th inst.

Unemployment.—Attention was drawn to a recent circular sent to the Press on the question of finding work during the present crisis, and the Secretary was instructed to thank Mr. Jennings for the assistance he had rendered in connection with same.

Conciliation Board.—The Secretary reported that the Conciliation Board had had several meetings in connection with the dispute that had arisen between Messrs. Green & Abbott and their employees, and that as the Men's Union had not accepted the finding of the Board, the services of the Board of Trade Conciliator had been called in. The Conciliator presided at a meeting of the Board held on November 26, 1914, and gave his award in the following terms:—

IN THE MATTER OF A DISPUTE BETWEEN MESSRS. GREEN & ABBOTT AND THEIR EMPLOYEES.

Having been duly appointed by the Board of Trade to act as Conciliator for the adjustment and decision of a dispute between Messrs. Green & Abbott and one of their workmen under the provision of the working rules for the regulation of disputes between the London Association of Master Decorators and the National Amalgamated Society of Operative House and Ship Painters and Decorators awarded by the late Mr. Benjamin Francis Williams under date October 2, 1913, I duly attended a meeting of the Conciliation Board at 5 Old Palace Yard, and having been informed that the nature of the dispute was whether by offering a workman who had been receiving 10*d.* per hour 9½*d.* per hour upon his starting a fresh job, Messrs. Green & Abbott had committed a breach of the working rules which justified the Society in withdrawing their workmen in the employ of the said firm. And having ascertained that the Conciliation Board were unable to agree and had duly applied to the Board of Trade for the appointment of a person to act as Conciliator, I now decide and award that the said firm, Messrs. Green & Abbott, have not committed a breach of the working rules, and that the said Society are not justified in withdrawing their workmen.

(Signed) F. A. GREER.

November 26, 1914.

The award removes any doubt as to the interpretation of the working rules as to rate of pay.

PATENT SPECIFICATIONS PUBLISHED DECEMBER 24, 1914.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 24,417. Oct. 28, 1913.—L. S. Bache, Bound Brook, Somerset, New Jersey, U.S.A. Treatment of wood or like fibrous material.

27,758. Dec. 2, 1913.—F. J. Rodgers, 159 Clive Road, West Dulwich. Apparatus for delivering disinfectant to flushing tanks and other like containers.

27,935. Dec. 4, 1913.—F. D. Currie, The Grammar School, Southport. Attachment for penholders, pencils, paint brushes, fountain pens, and the like.

27,982. Dec. 5, 1913.—Douglas Allport and Douglas Allport, junr., 106 Queen Victoria Street, E.C. Construction for sliding doors or partitions.

27,984. Dec. 5, 1913.—Henry Rottenburg, 13 Madingley Road, Cambridge. Window opening and closing apparatus.

28,038. Dec. 5, 1913.—J. C. Treen, South Metropolitan Gas Co., 709 Old Kent Road, S.E. Pre-payment gas meters.

29,316. Dec. 19, 1913.—W. G. Kent, 199 High Holborn, W.C., and E. W. Hovenden, 4 Shaftesbury Avenue, Bedford. Fluid meters and also those for adding reagents to fluids.

251. Jan. 5, 1914.—Birt Victor, Pascagoula, Jackson, Mississippi, U.S. Concrete sheet piles.

4,546. Feb. 21, 1914.—R. G. Carlson, R.I., Box 6, Huntley, Harlan, Nabraska, U.S.A. Door locks.

5,059. Feb. 26, 1914.—A. N. Fancher, 320 Fifth Avenue, N.W. Faribault, Rice, Minnesota. Door checking device and combined door closing and checking device.

5,080. Feb. 27, 1914.—J. B. Broadhead, Woodhouse Works, Brighouse. Self-acting air escape valves.

6,468. March 14, 1914.—Richmond Gas Stove and Meter Co., Ltd., and S. F. Jones, Academy Street, Warrington. Gas grilling apparatus.

9,083. April 9, 1914.—J. D. Hope, 55 Lionel Street, Birmingham. Casements.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

MR. WILLIAM ROBERT GALBRAITH, of Finchley Road, South Hampstead, civil engineer, who died on October 5, aged eighty-six, left £88,879 gross.

MR. WILLIAM NEWTON DUNN, F.R.I.B.A., died at Reigate on December 23 in his sixty-seventh year. Mr. Dunn became an Associate of the Institute in 1882.

LARGE extensions to the Pall Mall Depositories are being carried out at Barlby Road, North Kensington, under the supervision of Mr. William G. Hunt, F.R.I.B.A. The general contractors are Messrs. William F. Blay, Ltd., Railway House, Dowgate Hill, E.C., and at Dartford, Kent.

THE Coventry City Council, at their meeting on Tuesday last, approved of various schemes, including the following: The erection of a school in Folly Lane, provision of a pavilion in Spencer Park (£1,100), and the erection of eighteen houses for tramway men near Priestley's Bridge. The Coventry Guardians have accepted plans for alterations at Plemont Villa, Whitley, which are estimated to cost £1,200.

THE Weardale and Consett Water Co. have deposited a Bill in Parliament for some important constructive work. It is proposed to lay a pipe twenty-seven miles long and of three sizes from the Burnhope Burn to Wheatley Hill. A reservoir for impounding eight million gallons will be built at the former place. The cost of the scheme is estimated by the chief engineer, Mr. Robert Askwith, at £650,000.

THE death took place last week, after a long illness, of Mr. Frank Sumner, M.I.C.E., engineer to the City of London Corporation. Mr. Sumner was formerly borough engineer and surveyor of Woolwich and Bermondsey. Since he entered the service of the City Corporation in 1905, in succession to Mr. D. J. Ross, he had carried out many important improvements, notably in connection with the Guildhall, the construction of new subways, and in street lighting.

THE Woking Education Committee have been informed by the Surrey Education Committee that tenders would be invited for the erection of new buildings at the Goldsworth, Horsell (Infants'), Knaphill, and Maybury Council Schools, as soon as the consent of the Local Government Board to the necessary loans had been received. It was decided to recommend that the following five local firms be asked to send in estimates: Mr. F. Aylott, Messrs. Drowley & Bridger, Messrs. J. Harris & Son, Messrs. H. Ingram & Son, Mr. S. Silk.

MR. SAMUEL HENRY DIBBLE, of 30 Ledsam Street and of 154 Ladywood Road, Birmingham, builder, has left estate valued at £203,046, of which the net personalty is sworn at £54,589. Mr. Frank Piper, of 129 Gillott Road, Birmingham, builder's clerk; Mr. John Burton Buttery, of 7 Talbot Road; Smethwick, builder's clerk; and Mr. Walter Fry, of 57 Wigorn Road, Warley, builder's clerk, are three of the executors. To each of them £50 is left if still in his employ. The duty payable on the estate will amount to about £6,000.

AT the last meeting of the Sunderland Education Committee, it was reported that the Board of Education had approved the plans of the proposed secondary school for boys on the Barnes estate, subject to amendments in matters of detail. The original estimate was £37,189, and with a view to covering the cost and the requirements of the Board of Education, and meeting any increase of prices arising in consequence of the war, the architects had prepared an amended estimate of the cost, making it £40,112. The Council will be asked to proceed with the building of the school.

"PATRIOTIC War Songs and Poems" (London: Spottiswoode & Co., Ltd., price 4*d.*) is a compilation in booklet form of some thirty-five pieces deemed specially suitable for "fleet, camp, and country." Almost all the selections are well known, if not actual classics, and breathe the high patriotism of our forbears from Shakespeare to Tennyson. Living poets are lightly drawn upon, and no room is found for "Tipperary." Yet it would be interesting to know how many of our fighting men would care to hear "The Charge of the Light Brigade" or the "Highland Boat Song" in preference to that astonishing ditty. Those who do so will find the booklet full of good things. Any profits from the sale will be given to some War Fund.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, January 11.

Surveyors' Institution: Adjourned Discussion on the Papers delivered by Mr. Andrew Young (Member of Council) and Mr. L. O. Mathews (Fellow) on "The Report of the Land Enquiry Committee on the Acquisition of Land," to be reopened by Mr. Howard Martin (Past-President), at 8 P.M.

Royal Academy: Lectures on Painting (1) "The Mental Outlook in Painting," by Mr. H. H. La Thangue, R.A., at 4 P.M.

Tuesday, January 12.

Institution of Civil Engineers: Paper entitled "The Lateral Pressure and Resistance of Clay, and the Supporting Power of Clay Foundations," by Mr. A. L. Bell, B.A., B.E., M.I.C.E., at 8 P.M.

Wednesday, January 13.

Royal Academy: Lectures on Painting (2) "Colour in Painting," by Mr. H. H. La Thangue, R.A., at 4 P.M.

Peasant Arts Fellowship: Paper entitled "Rheims and Gothic Reconstruction," by Mrs. J. King, at University of London Club, Gower Street, at 8 P.M.

Thursday, January 14.

Society of Architects: Annual General Meeting, at 7.30 P.M.

SOME WORK OF THOMAS H. MAWSON.

FROM garden planning to town planning is but a step in development, and hence it is not surprising to find that Mr. Thomas H. Mawson, whose many works in garden design are to be found not only in our own country but across the seas, should, in these days when town planning has caught the public fancy, have turned his attention to the problem of the day.

Hence we may pleasurably if not profitably give consideration to a couple of his latest efforts in this direction. Although we speak of the work of Mr. Thomas H. Mawson, we are bound to recognise that the two schemes with which we are now dealing are put forward as the work of the firm of Thomas H. Mawson & Sons, included in which is the name of Mr. E. Prentice Mawson, prominently before the architectural public in a recent Soane Medallion competition.

Our first purview shall be directed to the scheme for remodelling the city of Exeter, the bird's-eye view for the new municipal centre of which was hung in last year's Royal Academy Exhibition and is reproduced by us to-day as one of our inset illustrations. In dealing with Exeter as a subject for town planning, the designer has of course an ancient city in his hands, a city which at one time was surrounded by walls of defence, hence possessing the almost invariable characteristics of such towns, the plans of which are dominated by their ancient walls and the gates in the walls. As usual the original main streets of Exeter are through streets running from gate to gate, and following naturally along the lines which the traffic would inevitably follow. As in the case of most walled towns, Exeter has its share of narrow streets and congested areas.

Exeter has already one entirely modern business street, Queen Street, which as such, says Mr. Mawson in his report, has not been an entire success and has never entered into serious competition with the ancient thoroughfare, which is known in its various lengths as Fore Street, High Street, and Sidwell Street. The failure of Queen Street as a business centre Mr. Mawson attributes to the fact that it is a more or less arbitrary creation rising out of the accidental placing of the modern stations, and, of course, especially Queen Street Station, and from the point of view of the town planner it possesses many of the properties of a cul-de-sac at its south-eastern end, and thus fails from the traffic standpoint, notwithstanding the fact that at its other end it falls very well into its place as a part of a well-marked radial system.

A further reason given for the lack of success in Queen Street arises from the fact that it has been treated too much as an isolated unit in the city plan, instead of being a part of a connected scheme for the improvement of the city as a whole. Thus it is a monument to the futility of disconnected effort, of tackling problems piecemeal, and of narrowness of outlook both in regard to its wider influences and its continuity through future ages.

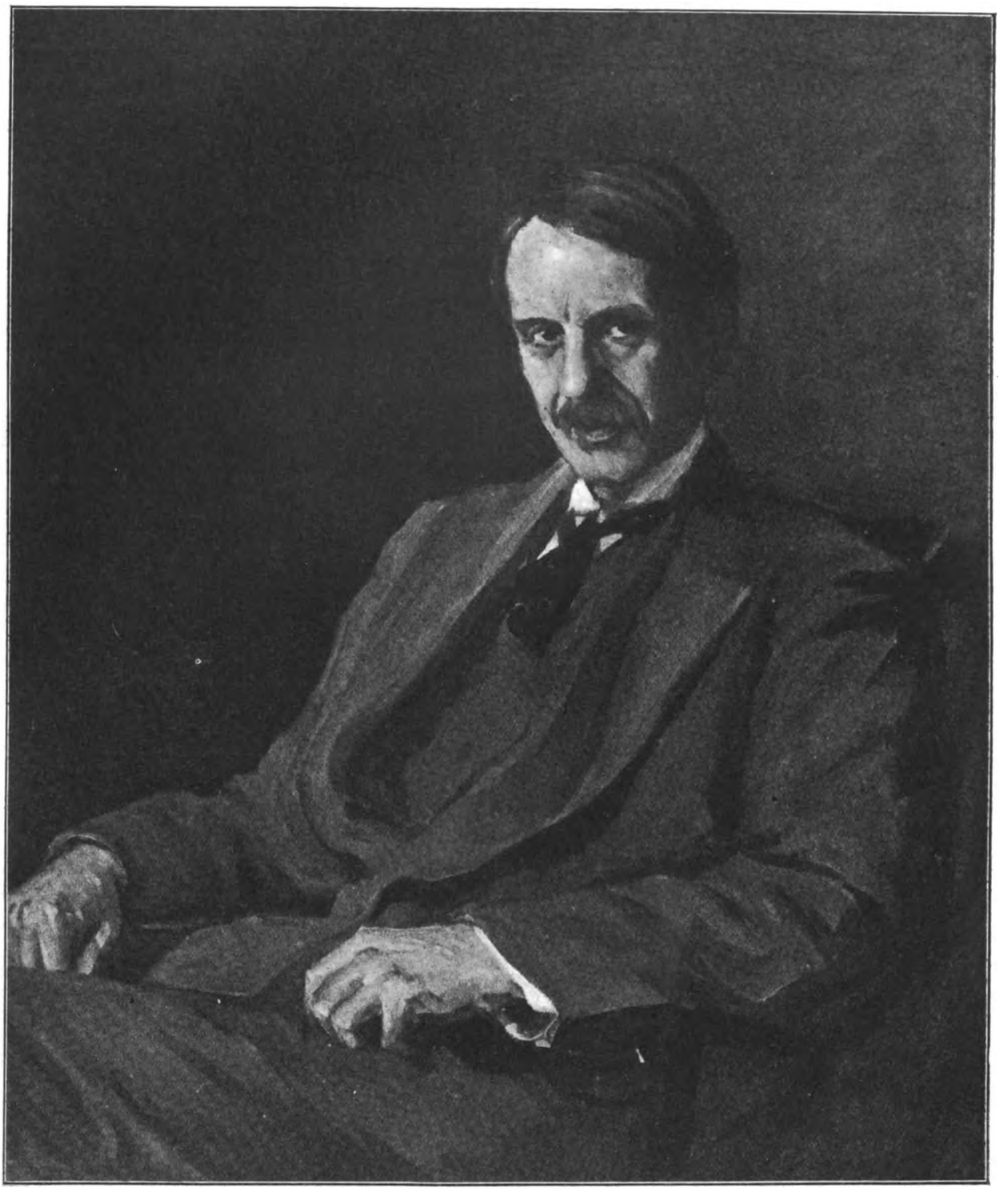
Mr. Mawson's main proposition is to throw up all attempt to make Queen Street a busy shopping street and to create instead a great municipal, literary, artistic, and educational centre. The college, museum, library, and art school are already there, and it is proposed to arrange a symmetrical group of civic buildings of which the centre will be occupied by a block containing the municipal offices and city hall, flanked on one side by a separate block containing a new library and records office, and on the other by a corresponding building which may serve as an art gallery, museum, or assembly hall.

Another vital element of Mr. Mawson's scheme is the construction of a new railway station in place of the existing Queen Street Station. This new station, it is proposed, should be planned on up-to-date American lines, with a "concourse" booking office and approaches at the level of Queen Street and above the platforms, which are to be reached by stairways. Naturally the new station is to have an imposing architectural elevation towards Queen Street.

To carry out such a scheme as that proposed, drastic clearance is required in the existing arrangement of the city, and it is contemplated by its author that a considerable time will be necessary for its completion. He justifies this anticipation by saying that "The Cathedral took three hundred years or more to build, so if the fresh task is to form a proper adjunct to it it too must be a work the magnitude of which will necessitate a sustained effort over a very long period, and the steady pursuit of a settled policy for its ultimate fulfilment."

Included in the drastic clearance proposed is the sweeping away of one of Exeter's public markets, the old church of St. Pancras, and "another place of worship of little architectural merit." The proposed removal of these will no doubt raise strenuous opposition to the scheme, but to us the interesting point in our study of Mr. Mawson's methods as a town-planner is the indication that in order to obtain what he considers a desirable result he is prepared to be ruthless in destruction and to conceive his schemes in a large and broad view, looking forward to even a distant future for their complete realisation. Herein we recognise the mind of the garden architect, who, particularly when he intends planning on formal lines, must often be ruthless

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MR. THOMAS H. MAWSON, FROM PORTRAIT BY SIR HUBERT VON HERKOMER, R.A.

in alteration and even destruction, and must always have before his mental vision the future rather than the present effect of his lay-out and planting.

We may now direct our attention to quite a different problem, as tackled by Mr. Mawson and his sons. "Borden Park, Ottawa's premier residential and recreational suburb,' in the somewhat flamboyant nomenclature of the descriptive report. This is a building estate of some 750 acres on the shores of Lake Deschênes, some distance from Ottawa, which it is proposed to develop as a residential sub-town, connected to the capital by an electric railway. Argument in favour of the estate's position is based on a comparison between the modern great cities of the New World and the country towns of the Old World; and no doubt Ottawa is, or will be, sufficiently large to support a residential sub-town—rather than suburb—at a considerable distance from its centre.

Let us see how Mr. Mawson develops his building estate. As a town, although a sub-town, it has its business centre, its quasi-civic centre, its recreational centres, and its factory district, so that within its 750 acres is the complete urban constitution on a small scale. Being intended as a "recreational suburb," we naturally find considerable importance allotted to the chief recreational centre.

The estate is bisected, or at least divided into two approximately equal halves, by the street railway, which runs in a serpentine line from Ottawa to other districts beyond the estate. Normal to this and crossing it Mr. Mawson places his principal axial line, on which are the hotel, nearest the lake shore, the business centre, and the quasi-civic centre. A secondary axial line, approximately parallel to the principal, dominates the chief recreational centre, on which are an artificial boating harbour or lagoon, the county club, and a nine-hole

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golf course. In the main traffic lines of the town we note the penchant of the garden architect for sinuous curves, which, intersected by short straight streets, leads to a result intended by the author to give variety to the shapes and sizes of the various building plots. It also leads to the development of awkward pieces of back land, which it is suggested may be "suitable for small industries, such as bake-houses, garages, stables, smithies, &c., in centres of building plots." Whether this development and use are desirable features of "Ottawa's premier residential suburb" is a question to which experienced estate surveyors may not always be found ready to give an affirmative answer. It is true that the suggestion is made that they should be hidden "behind trees and behind the houses"—but town houses usually have windows at the back as well as in front.

The study of actual work by those esteemed as experts must be fascinating and interesting to all those who may hope to follow in any profession; but we must warn any aspirants who turn their attention to the reports of Thomas Mawson and Sons that a very vital consideration is omitted, that of expenditure and profit or return.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

THE study of old furniture is a quite useful one for architectural students in moderation, for old furniture was frequently designed, if not by architects, at least by those who designed details of architecture, and the line of demarcation between fitments and furniture is certainly elastic. Moreover, the architect should, and not infrequently does, even now-a-days, design the furniture as well as the fitments of the buildings erected from his designs.

"Improver" has selected a "Chippendale armchair—1760" for his subject, which, whatever may be the authenticity of its pedigree, carries evidence of the characteristics of the master, and is withal an excellent piece of design and construction. One must not necessarily assume that all work bearing these characteristics actually was produced in the master's workshop, for the term "Chippendale" furniture is rather generic than personal. "Improver's" drawing is well executed and thorough.

"Rambler" has found his subject in a seventeenth-century "Welsh cupboard," clearly the work of a craftsman in the vernacular manner of his day, with a curious admixture of Classic and Gothic motifs. "Rambler" should, in his drawing, have taken more account of the construction of his subject, and particularly of the jointing, which, as the piece is in well-marked oak, would be easily decipherable. We have not even an indication of the method of mitreing, whether joiner's or mason's, which at the particular date of the example is of importance.

An Italian folding armchair of carved oak, of the approximate date 1550, has been chosen by "Harley," a highly interesting example of a not uncommon type, on somewhat similar lines to the so-called "Glastonbury" chair. "Harley" at present lacks experience in draughtsmanship, but, of even greater moment, has devoted too little attention to the construction of the specimen he has drawn.

"Owain" has measured and drawn a seventeenth-century oak cupboard from the Victoria and Albert Museum, an excellent example of Jacobean furniture. "Owain's" drawing is commendably workmanlike, and shows construction, but a perspective sketch is missing.

Mr. B. Fraser has also fixed upon a Jacobean piece for his subject, "an oak buffet from the Rows, Watergate Street, Chester." This, too, is excellent and particularly interesting from the use of inlay as decoration to the panels and other parts where ordinarily at this date carving would be found.

We award prizes of one guinea each to "Improver" and Mr. B. Fraser.

NOTES AND COMMENTS.

THE interior of Bentley's masterly cathedral at Westminster will shortly advance a further stage towards completion by the opening of the chapel of St. Andrew. The work of the Sicilian craftsmen who have been so long engaged on it is one of the richest examples of mosaic and marble inlay in the metropolis. There are twelve chapels in the cathedral, and St. Andrew's is the third that has been completed. Both in natural and in artificial light the chapel, with its groundwork of gold, has a most brilliant appearance. Handsome grilles with gates of bronze gilt separate the chapel from the south aisle. The marble pavement representing the sea has inlaid fishes of coloured stone. The canopy of the altar is white marble on pillars of verde antique, with bronze bases and capitals. The altar mensa is of black Alloa granite supported on five pillars of red Peterhead granite, with bronze capitals and bases of Aberdeen granite. The reredos is of marble with sculptured bands and a cross inlaid of antique Egyptian porphyry, and upon this is a large bronze figure of Christ. The dado of the south walls consists of Hymettian marble, blue and white, the colours of Scotland and of St. Andrew. Over each window there is a spandril with a sculptured angel supporting an enamelled shield with the arms of the noble donor. In the arch of the east wall is a large jewelled St. Andrew cross on a flowery field with peacocks and flying white doves. The groundwork of the vaulting is of gold mosaic, and on each side are representations of six cities connected with the Apostle—Patras, Amalfi, Constantinople, Bethsaida (his birthplace), Milan and St. Andrews.

The Shropshire Historical Antiquities Association, founded in 1912, has just issued its first report.

The report states that the Association has aimed not at undertaking the repair or preservation of buildings of architectural or historic interest, but at acting as a sort of central agency for receiving information about such monuments when they seem to be threatened. The committee had had a large number of cases brought to its notice, and was pleased to report that in most cases those to whom belonged the custody of the monuments in question had welcomed the advice and assistance of the Association. In regard to Lloyd's mansion in the Square at Shrewsbury, dated 1540, which was threatened with demolition, and the chapter-house of Buildwas Abbey, part of which was insecure, the Association had been working in conjunction with the Society for the Protection of Ancient Buildings. In regard to two very important monuments which had suffered much from neglect, Langley Chapel and Mitchell's Fold, a sort of Druidic circle in the hills near Corndon, the former had been put in the custody of the Board of Works as an historical monument, and the owner's permission had been obtained for similar action in regard to the latter.

At Ludlow the carrying out of repairs to certain houses revealed the fact that they contained good timber work. Under the advice of the Association the houses had now been restored more or less to their original form, and the beauty of two of the Ludlow streets had been materially enhanced.

Other matters dealt with by the Association had relation to the Tong Cup, a faculty for the alienation of which was refused by the Chancellor; the Shrewsbury town wall bastion; the Upton Cressett gate-house; Ireland's mansion, Shrewsbury; Lilleshall Abbey; Haughmond Abbey; Stokesay Castle; Craven Arms, where precautions were taken against suffragettes; Clun Bridge, and other historic buildings.

The opposition naturally aroused in many towns by the intention of their corporations to undertake the supply not only of electricity, but of electrical fittings, has arisen also in Edinburgh, where the members of the electrical trade have sent to the members of the Corporation a

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representation against the clause in the proposed Provisional Order for the city, at present under the consideration of the Council, by which the latter proposes to apply for special powers to supply or hire all electrical apparatus, except lighting apparatus, to fit up same, to open showrooms or shops throughout the city for this purpose, and to use public money for the advertisement and promotion of the scheme. The representation is signed by nearly one hundred firms in the trade, and also by thirty-five other firms on behalf of the members of the Edinburgh, Leith, and District Ironmongers' Association. The representation reminds the Council that a somewhat similar proposal was before it only two years ago, in connection with the Provisional Order of 1913, when it was defeated by a large majority in the Council. It adds that even although the proposal had not been discussed so recently the present national crisis is not a suitable time for its introduction; it is, comparatively speaking, a question of minor importance to the Corporation, but of prime importance to one of the industries of the city, which has already been badly hit owing to the number of men away on service and the compulsory restriction of lighting within the city area, with the consequent loss of remunerative trade to the traders. It is also urged that since the last proposal was before the Council the traders have offered to consult and co-operate with the Corporation department in every way in their power with a view to extending the uses of electricity in the city, but that offer has not been accepted; that no private industry can live against rate-aided competition, as it is not fair trade; that the supply of electrical appliances, unlike the supply of electrical energy, is not a monopoly, and consequently is not a suitable field for municipal activity; that Edinburgh is already extremely well provided with electrical showrooms in all parts of the city by the private trader; that the proposals would be no advantage to the Corporation or the general body of the ratepayers, and would do incalculable damage to an industry of the city which employs a large number of workers, occupies business premises of considerable rating value, and in which a considerable number of ratepayers have sunk their capital.

We learn from the *Western Morning News* that the Museum and Art Gallery Committee of the Plymouth Corporation have recently acquired, from two independent sources, a number of fine water-colour drawings by John Foulston, a London architect, who, between 1810 and 1840, carried out a great deal of work in the West of England. In 1838 he published a book detailing the designs he had there carried out. Mr. Foulston seems to have paid much attention to Plymouth. If the city fathers of that period were deterred from carrying out all his schemes on the ground of expense, it might have been happier if their successors had kept his designs before them.

His most important works now existing are the Royal Hotel and Theatre and the Athenæum. With the former building, and the erection of St. Andrew's Chapel, better known now as St. Catherine's Church, Lockyer Street was associated. It would have made a really handsome thoroughfare had the design been carried out in its entirety. But the patchwork jobs of the independent builder intervened, and marred what might have been a fine scheme. St. Andrew's Church was restored by Foulston, and an interesting feature was the old three-decker pulpit. This was swept away during later restorations. The same type of pulpit was in St. Andrew's Chapel. The Proprietary or Cottonian Library, in Cornwall Street, was also designed by Foulston, but his frontage there was pulled down in 1853 during the enlargement of the building. The Exchange, in Woolster Street, was never built as designed, probably for reasons not unconnected with expense. Water-colour drawings of the above buildings are contained in the collection.

Among the designs not carried out, and which would have improved Plymouth far beyond its present claim to be a well-laid-out town, was the Esplanade on the Hoe. The present pile is a cheaper modification of the architect's design, but Elliot Terrace and the other buildings should have been occupied by a fine range of houses of which two drawings are on view.

The public baths question has of late years been many times discussed, and its only result up to the present is a very fourth-rate establishment in a back street. Foulston's drawings show that he had the matter in hand nearly a hundred years ago, and designed a very handsome building for the Hoe. Another sore point of recent times has been the condition of Princess Square, but Foulston's scheme if carried out would have settled this vexed question, as his drawing shows a handsome structure modelled after the monument of Lysicrates at Athens, a design not impossible to carry out even now. Other delightful drawings show an extremely handsome Armada Arcade and a covered way which might be part of a winter garden, but in what connection these buildings were designed is doubtful. Other drawings refer to libraries in Tavistock and Torquay, together with a country seat which has not yet been identified.

The collection is in a perfect state of preservation, and the Art Gallery Committee are to be congratulated on securing such a "prize" of architectural interest, giving a suggestion of what Plymouth might have been.

Very wisely, before actual construction, a model has been made of the proposed memorial at Holyrood, which has excited so much controversy at Edinburgh, and disagreement, we might say, between that city and Glasgow. The model is intended to make trial of the effect which will be produced at the Palace by the erection of the statue of King Edward VII., which forms part of the national memorial. One part of that memorial will consist of handsome wrought-iron gates to enclose the forecourt on its north and south sides. The more personal part will take the form of a statue of the late King, which is to be erected on a site at the foot of the Canongate, on the left hand side of the street, and looking across to the older half of the Palace. From plans by Mr. Washington Browne, R.S.A., the architect of the memorial, Mr. Colin M'Andrew, builder, has prepared on this site, in wood and grey canvas, an interesting representation of the manner in which it is proposed the site should be treated for the reception of the statue. The length of the plot of ground affected is 90 feet, and it has a width of 35 feet. The latter practically represents the breadth of the platform, approached by a series of steps, on which the statue will be placed. For background immediately behind the statue is a semi-circular wall, 17 feet 6 inches in height, with moulded top. The walls on each side are 12 feet in height. The ends of the platform are closed by a low wall surmounted by railings—with columns at the opening and angles. The opening between the columns on the front of the platform is 60 feet. The south angle column at the Canongate is about 18 feet in height. At the corresponding angle at the north end is a similar column between which and a massive pier on one side of the roadway—a representation of one of the piers which will carry the gate—is a railing about 13 feet in height, representing the footway gate into the forecourt. This pier is about 30 feet high. Its base measures some 12 feet by 7 feet; the faces on the north and south sides are ornamented by twin pilasters, and there is a massive cornice and finial. The pedestal of the statue, which is well set back on the platform already alluded to, will have a representation of the figure placed upon it to-day so that the full effect thereby may be secured. When all is in order, the Principal Architect of the Board of Works, London, will, it is understood, come to Edinburgh and report on the subject to Their Majesties, who continue to take in the details of the memorial the greatest interest.

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OUR good friends of *The Sanitary Record and Municipal Engineering* have a gibe at the criticism by architects of building by-laws, affirming that architects "desire to be unfettered by rules and regulations." In this our contemporary errs. The main ground of objection by architects to existing by-laws is that, whilst the criticism of municipal surveyors as stated by our friends "is in general upon the inadequacy of the by-laws to prevent the use of improper materials or their insufficiency to ensure hygienically constructed dwellings," is a quite correct criticism, the by-laws cause unnecessary expense and prevent the building, in rural districts especially, of houses for which the tenants can afford to pay an economic rent.

The Municipal Art League of Chicago, an account of whose latest activities we give elsewhere from the *Christian Science Monitor*, of Boston, U.S.A., is obviously doing good work that may worthily set an example to many of our provincial cities and towns.

WAR ITEMS.

THIS is the first great war in which field motor-ambulances have been extensively used. It was inevitable that many defects should be found in existing types, and in various quarters experts began to ask whether something could not be done to standardise the patterns and to improve the type. At the instance of Mr. Henry S. Wellcome, the founder of the Wellcome Bureau of Scientific Research, a Commission has been formed, and the names of members show at once that the matter is regarded as of first importance by those most intimately connected with the welfare of the wounded soldier.

Sir Frederick Treves, whose long experience and distinguished service specially fit him for the task, has consented to be the chairman. The Admiralty is represented by the Director-General of the Medical Department, R.N., while the Quartermaster-General to the Forces and the Acting Director-General, Army Medical Service, represent the War Office. The British Red Cross Society is, of course, represented by Sir Frederick Treves, and the St. John Ambulance Association by Sir Claude Macdonald and Sir John Furley. The remaining members are all experts. This Commission will first and foremost act as a judging committee for the award of prizes of the value of £2,000, provided by the Wellcome Bureau of Scientific Research. These prizes are offered for the best designs of an ambulance-body which shall fit a standard pattern motor-chassis for field motor-ambulances. The last day for the receipt of competing designs is June 30, 1915. It is hoped that the competition will bring in a number of ingenious designs from which the ideal field ambulance-body will be evolved.

It may be asked why the competition is restricted to designs for a body and not for the complete ambulance, including a chassis. The reason is that a chassis takes much longer to build than a body, and that, when war breaks out, it is impossible to get at short notice anything like a sufficient number of any one type of chassis. On the other hand, a standardised body to fit any chassis of approved dimensions can be constructed in numbers at comparatively short notice. And a perfected body is badly wanted to ensure complete comfort for the wounded.

It is hoped that the information obtained by the competition, and in other ways, will be published in some permanent form, available for future reference. Probably in addition to one design of special excellence, there will be submitted various ingenious suggestions which may be incorporated in the pattern design approved by the Commission. For these a portion of the prize-money has been set apart. The first prize is of one thousand pounds, the second of five hundred, and the third of three hundred pounds. All details of conditions may be obtained from the Secretary, The Ambulance Construction Commission, 10 Henrietta Street, Cavendish Square, London, W. The competition is open to citizens of all nations.

[Now that there is a slump in architectural ones, this competition for a hospital on wheels may interest some of our readers.—ED.]

A well-attended meeting of the members of the Liverpool Architectural Society was held for the purpose of presenting their President, Mr. G. W. Fraser, now a lieutenant in the 1st Battalion K.L.R., with a sword in recognition of his valuable services to the Society as secretary for many years and as their present president.

Mr. W. E. Willink, in a few well-chosen words, spoke in a happy mood of the great popularity of Mr. Fraser, as instanced by the warm response to the appeal for subscriptions to the presentation sword, and spoke of his patriotic conduct in responding to the call of his country to serve the colours.

Mr. Fraser briefly replied, and thanked all his architectural comrades for their good wishes, and expressed his extreme gratification at the presentation, and said that he would feel upheld by the knowledge that he had the universal approbation of the Liverpool Architectural Society in whatever capacity he might be called upon to act.

Sergeant-Major Draycott, of the 1st City of London Sanitary Company (Territorial), writes:—

I have to thank you for so kindly giving publicity to our previous appeals for recruits for the above Company. The results of that appeal have been, up to the present, quite satisfactory, but more men are wanted, and still more men.

The duties of the men of the Company are: To select sites for camps and bivouacs; to ensure that these are healthy and can be properly drained; to see that a good water supply is provided, and to examine and, if necessary, purify the water; to see to the location of latrines and ablution places, and the speedy removal of all solid and liquid refuse from the camps, and to act generally as health superintendents, and limit by their agency the outbreaks of preventable diseases, such as typhoid fever and dysentery, which in most campaigns have caused an excessive number of deaths.

One section of the Company has been at the Front for some time, and has so proved its value with the troops and in enforcing sanitation at base camps, at towns where troops are billeted, and at important railway stations, that the War Department has decided to attach a Sanitary Service Section to every division of the Army.

Several such sections, each consisting of an officer, a staff-sergeant, a sergeant, two corporals, a lance-corporal and twenty men, recently left for duty with the Expeditionary Force, and further sections are being formed immediately.

All recruits must be prepared to sign on for Imperial Service, and men from municipal engineers', architects', and public health offices, and from similar private offices, who possess satisfactory sanitary qualifications, are given preference in the selection for promotion to N.C.O. rank.

The age limit is 19 to 38, height 5 feet 3 inches and upwards, chest 34 inches and upwards, and the usual medical examination is made.

The rates of pay are: Staff-Sergeant, 4*s.* 5*d.*; Sergeant, 3*s.* 10*d.*; Corporal, 2*s.* 11*d.*; and Private, 1*s.* 10*d.* per day, and separation allowance in addition.

Intending recruits should apply personally to the 1st City of London Sanitary Company, Room B.6, Duke of York's Headquarters (Turk's Row Entrance), Chelsea, S.W., but persons living in the provinces should obtain and forward to headquarters a certificate of fitness from their own medical man. They will then be advised when to attend for enlistment, and a free travelling warrant to London will be issued to them.

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UNIVERSITY EXTENSION LECTURES IN MUSEUMS.

IT is satisfactory to find that the interest shown in Mr. Banister Fletcher's lectures on architecture, in spite of unprecedented war conditions, has justified arrangements to continue these courses this term. They are the only courses of University Extension lectures now being given in the museums, and are further, from the nature of their subjects, of special interest at the present time, when so many architectural monuments have become prominent through the ruthlessness of the enemy's system of warfare.

The course at the British Museum began on Thursday, January 7, at 4.30, and is on Roman Architecture, which is a subject of perennial interest both on account of the unfading fascination of Ancient Rome and because it is the basis of all later styles.

At the Victoria and Albert Museum the course begins on Monday, January 11, at 4.30, with nine lectures on English Gothic; while there are special lectures on Westminster Abbey, our national Walhalla, and on the Tower of London, which has been by turns fortress, palace, law courts, prison and arsenal, and has always kept abreast of the needs of the times. Cathedrals, town and trade halls of Belgium, the martyr country of to-day, will also be described. Full particulars may be had from the Hon. Secretary, 10 Woburn Square, W.C.

COMPETITION NEWS.

BURNLEY.—Competitive plans for the extension of the Burnley Victoria Hospital have been sent in by ten selected architects, and it is expected that the assessor will make his award at an early date. The proposed enlargement will accommodate about fifty beds, and a new operating theatre and a nurses' home will be provided.

ILLUSTRATIONS.

CITY OF EXETER: PROPOSED IMPROVEMENTS.

OUR reproduction of the drawing which appeared in last year's Royal Academy Exhibition is referred to in our article on the work of Thomas H. Mawson.

SKETCHES AT KING'S LYNN BY MR. WALTER GANDY.

THE author writes: To King's Lynn I went mainly in order to study the delightful little Custom House, a building of 1683, attributed by some to Wren, but according to Mr. Beloe, the munificent local antiquary, its authorship is claimed by Henry Bell, an architect who was twice Mayor and died in 1717. A good view of the building can be had from a wharf on the opposite bank of the Purfleet, but stacks of timber were occupying the best positions, and the tide was inconveniently out just when the light was right, so I gave up the attempt to make a drawing. With its two magnificent churches, the Guildhall, the Red Mount Chapel in the Walks, the Greyfriars Tower, the old inn called the Greenland Fishery—bought, restored, and opened as a museum by Mr. Beloe—many fine houses of the seventeenth and eighteenth centuries, and railways, north, south, east and west, to the Marshland villages, the healthful cliffs of Hunstanton, the Sandringham domains, or Ely city, it is evident that King's Lynn is a capital centre for a varied holiday.

Within a short distance of each other there may be seen the doorways represented in my sketches. Thoresby's College, built by Thomas Thoresby, Mayor in 1502, for the priests of the parish, is now a girls' school, after passing through some inglorious times. The design of the door is very like that at Great Snoring Rectory, not many miles away. In the same street is the doorway with spiral columns of wood (heavily loaded with paint). At the back of the house, which is two or three hundred years older, is a lofty brick tower from which one may suppose the master would watch for the arrival of his laden argosies. The street front was built about 1707 from the designs of Henry Bell. In Nelson Street is the Vicarage; its long low front has an upper floor, perhaps Jacobean, and a ground floor of commonplace brick, but with a handsome door brought, I was told, from an older vicarage house near by. Next to the Vicarage is a humble kind of quadrangle called Hampton Court, entered by way of a Gothic archway, from the roof of which hangs a cannon ball, said to be the one that went through the roof of St. Margaret's Church in the siege of 1643. The remaining doorway of my group is in St. Nicholas Street, and was in rather bad condition. In the adjoining St. Ann's Street there was a large Georgian house, said to have belonged to Sir Robert Walpole, member for Lynn. It was empty when I saw it, and apparently doomed to demolition. Perhaps it has disappeared now.

Across the street stands St. Nicholas Church (or rather Chapel, for it has no separate parish, and is served by the clergy of St. Margaret's, the mother church). It is a quite large Perpendicular church of the "hall" type, and was completed about 1420. A spire was added during the restoration in 1868 by Sir Gilbert Scott, when, it would seem, a good deal of the old woodwork was cleared out. The organ case, Litany desk, and other well-designed fittings are new, and were given by Mr. Beloe. The font dates from 1627, but the cover is modern, although it follows the lines of the old one as represented in engravings. The woodwork of the extremely beautiful south door has possibly been restored, for one can hardly imagine such delicately carved details to have lasted so many years uninjured. The western double doorway is almost as good as the south door. Its head rises above the sill line of the west window, a huge thing of eleven lights. The east window is almost as wide, and has nine lights.

St. Margaret's Church is more varied in period and details than St. Nicholas, having retained a good deal of Early English work, especially in the two western towers. The nave was rebuilt after a great storm in 1741, and has the defects of that dark time. There are some sixteen misericordes of the fourteenth century, a length of rich Jacobean screenwork under the organ, and an organ front of 1754 built by Snetzler. Dr. Burney was at one time organist here, and his "History of Music" was largely written during his stay. The present organist, Mr. W. J. Comley, is worthily carrying on the musical traditions of the church, and I was fortunate enough to be present at one of his Sunday evening recitals. With a reference to the two famous Flemish brasses—formerly in the chancel, but now on the floor under the south-west tower—these brief notes may serve to send more pilgrims to the interesting town of King's Lynn.

EIGHTEENTH-CENTURY STAIRCASE.

THE measured drawing of a staircase from a house in Sunderland by "Improver" was awarded a prize in "The Architect" Students' Sketching and Measuring Club.

THE death is announced of Lieutenant-Colonel Ernest Herman Haig, of the Royal Engineers, at the age of forty-eight. He was the eldest son of Mr. Axel Herman Haig, the artist, and entered the Army in 1887, receiving his majority in 1905. He was gazetted lieutenant-colonel in June last, and was stationed at Shoeburyness, where he died.

THE annual general meeting of the Dundee Institute of Architects was held in the Institute Rooms, 43 Nethergate, Dundee, on the 30th ult., when the following office-bearers were elected for the ensuing session: President, Mr. Charles G. Soutar, Dundee; Vice-President, Mr. James Findley, Dundee; Council, Messrs. A. Grainger Heiton (Perth), Alexander Symon (Arbroath), G. D. B. Shepherd (Dundee), and George Pyott (Dundee); Secretary, Mr. William Salmond, 6 High Street, Dundee; Treasurer, Mr. David L. Allan, Dundee.

AT a meeting last week of the Hemsworth Rural Council, Mr. J. S. Potts moved that the Council consider the desirability of appointing a fully qualified architect to prepare and supervise the housing schemes proposed to be undertaken in the various townships of the rural area. He said they had every confidence in their surveyor, but this was a big undertaking, involving the expenditure of a large sum of money. The number of houses they had already agreed to build was something like 160, which, if they estimated the capital investment in each house at £180, meant a total capital outlay of £28,000. The number of houses actually asked for in the area was 600, representing an outlay of £115,000. If the surveyor was going to supervise that scheme his ordinary duties would be interfered with. The Council would be well advised to have a man who could devote the whole of his time to the work, especially if they could get one with previous experience. It was eventually decided to refer the matter to the parish councils concerned for their recommendations.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A BUSINESS meeting of the Institute was held on Monday evening, the President, Mr. Ernest Newton, A.R.A., occupying the chair over about thirty members.

The Hon. Secretary, Mr. E. Guy Dawber, announced the death of Mr. E. A. Johnson (F.) and Mr. W. Newton Dunn (F.).

Mr. P. M. Ware, of Kimberley, South Africa, was elected an Associate.

Referring to Mr. Max Clarke's motion, the President said that it might be considered not to be strictly in order, but he had no wish to attempt to stifle discussion. The debate would take place without prejudice to any action that the Council might or might not take according to the by-laws.

Mr. Max Clarke then moved his resolution: "That the Austrians and Hungarians, seven in number, now enemies of the King, whose names appear in the 'Kalendar' for the present session, on page 231, cease to be members of this Institute and their names be removed from the list of members. And also that the Germans, eight in number, now enemies of the King, whose names appear in the 'Kalendar' for the present session, on page 232, be dealt with in a similar manner."

Mr. Clarke referred to the vandalisms and atrocities practised in Belgium and to the attack on Scarborough. He thought that the only way that the Institute could express its detestation of these occurrences was by expelling those members who belonged to the hostile nations.

Mr. Maurice B. Adams, in seconding, said that at the present moment they could have no wish to have any association with German architects. Many of them had feelings which were too strong to express in parliamentary language.

Mr. William Woodward said he had carefully read through the Belgian and French official White and Red Books, which proved the terrible devastation and cruelties that had taken place in Belgium and Northern France. He suggested that the alien enemy members should be asked to resign, as they had no feeling against them individually, but only as representing their nation.

Mr. Francis Hooper moved an amendment that it was beneath the dignity of the Institute to expel those foreign members. At one time the French had been regarded as the great enemies of England; at another the Russians. They should look forward to the period of reconstruction that would take place after the war was over.

Mr. W. R. Davidge seconded. He claimed that these alien members were in the position of hostages, and that it would be cowardly to do anything against them. Their membership was practically suspended for the period of the war.

Mr. G. A. T. Middleton suggested that on the declaration of war the hostile members, ipso facto, ceased to be members.

Mr. A. R. Jemmett said it was childish conduct to penalise these members for the faults of the nation to which they belonged.

On a vote being taken ten members were in favour of the amendment and ten against.

The President said that it was his duty as Chairman to maintain a strictly impartial attitude, but this voting had brought him into the line of fire. He happened to have a strong personal opinion in the matter and would give his casting vote. He thought that they should look forward to the new Germany that would arise after the war was over as a nation awaking from a horrid dream. He voted for the amendment.

On the amendment being put as a substantive motion it was carried.

This concluded the business, and the meeting adjourned at 9 P.M.

R.I.B.A. EXAMINATIONS.

THE FINAL: ALTERNATIVE PROBLEMS IN DESIGNS.

INSTRUCTIONS TO CANDIDATES.

1. The drawings, which should preferably be on uniform sheets of paper of not less than imperial size, must be sent to the Secretary of the Board of Architectural Education, Royal Institute of British Architects, 9 Conduit Street, W., on or before the dates specified below.

2. Each set of drawings must be signed by the author, and his full name and address, and the name of the school, if any, in which the drawings have been prepared, must be attached thereto.

3. All designs, whether done in a school or not, must be accompanied by a declaration from the student that the design is his own work and that the drawings have been wholly executed by him. In the preparation of the design the student may profit by advice.

4. Drawings for subjects (*a*) are to have the shadows projected at an angle of 45° in line, monochrome, or colour. Drawings in subjects (*b*) are to be finished as working drawings. Lettering on all drawings must be of a clear, scholarly, and unaffected character.

SUBJECT XIX.

(*a*) A memorial to Lord Roberts overlooking the training ground of a garrison city; on a low hill rising with a general inclination of one in five. The memorial is to stand on the summit of the hill upon a level plateau about 80 feet in diameter. The height of the memorial is not to exceed 120 feet.

Drawings.—General plan to $\frac{1}{16}$-inch scale. Detail plan (so far as may be necessary), elevations and sections; scale optional.

(*b*) A garage for a large country mansion. Provide for four owners' and four visitors' cars, and washing place; residence for chief chauffeur, and sleeping accommodation for four visitors' chauffeurs. Provide also accommodation for artesian well, pump, and water tower to supply the mansion; electric lighting and power plant, engineer's workshop. Heating, fuel store, and incidental requirements to be provided. The site is not limited; the courtyard type of plan is suggested.

Drawings.—Plans, elevations, and sections to $\frac{1}{8}$-inch scale, and $\frac{1}{2}$-inch detail of a portion.

SUBJECT XX.

(*a*) A façade for an important firm of fine art publishers in the principal street of a capital city. Width of site 36 feet (between buildings). Height not to exceed four floors above pavement line; there is to be a shop front on the ground floor, and a separate entrance to a fine art gallery on the first floor. The facing material to be generally of stone, but brick is not to be used.

Drawings.—Plans at ground and first-floor levels, showing arrangement of façade; elevation and section. All to $\frac{1}{2}$-inch scale.

(*b*) A detached swimming bath for a boys' public school. Bath not to exceed 70 feet in length.

Drawings.—Plan, elevations, and longitudinal section to $\frac{1}{8}$-inch scale, and a cross section through bath to $\frac{1}{2}$-inch scale.

SUBJECT XXI.

(*a*) A band stand in a public park to accommodate twenty performers. To be arranged as a large alcove in connection with a colonnade.

Drawings.—Plan, elevation, and section to $\frac{1}{8}$-inch scale. Details to $\frac{1}{2}$-inch scale.

(*b*) A hostel for male students on a detached suburban site to accommodate thirty, and to include a suite of rooms for married warden.

Drawings.—Plans, elevations, and sections to $\frac{1}{8}$-inch scale.

Dates for Submission of Designs in 1915.

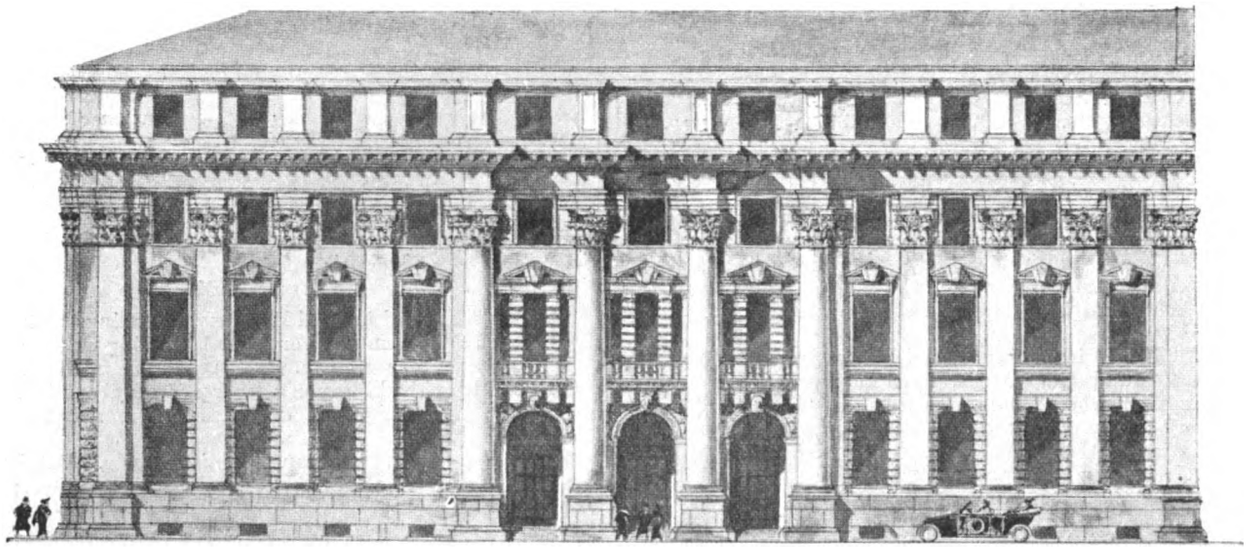
	Subject XIX.	Subject XX.	Subject XXI.
United Kingdom ...	27th Feb.	30th April	30th June
Johannesburg ...	30th April	30th June	31st Aug.
Melbourne	30th May	31st July	30th Sept.
Sydney	30th May	31st July	30th Sept.
Toronto	31st March	30th May	31st July

COMPETITION DESIGNS FOR THE BUILDING OF THE RUSSIAN BANK FOR FOREIGN TRADE, PETROGRAD.

LAST year the Russian Bank for Foreign Trade, one of the wealthiest in Russia, announced an open competition for a design for a building to accommodate the head offices of the bank, as well as a number of private offices. Sums amounting to 9.000 roubles (more than £900) were offered as premiums for the best designs submitted. Simultaneously a limited competition was arranged, in which a number of well-known Russian and foreign architects were invited to join, and in which each competitor was to receive an equal premium.

In all thirty-six designs were submitted, seven of which, entered for the limited competition, we reproduce from the Petrograd *Zodtchy*, in whose pages they were originally

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THE RUSSIAN BANK FOR FOREIGN TRADE, PETROGRAD. Design by M. J. FOMIN, Petrograd.

published. Four of these are the work of Russian architects and the remaining three by a French, a Belgian, and a German architect respectively.

It would perhaps be difficult to find another so characteristic an example of the prevailing tendencies in the modern architecture of the four countries concerned as is afforded by the front elevations in these designs. We see the classical spirit of modern Russian architecture evidenced in the designs of MM. Fomin, Lidval, Lialevitch, and Peretiatkovitch—all distinguished representatives of the classical movement in Russia, whose works have on several occasions received notice in these pages. The features of the national architecture of Belgium, France, and Germany are strongly marked in the designs of M. Saintenoy, M. Bocage, and Herr Jessen, but perhaps in no other to so striking a degree as in that of the last-named. The clear-cut, balanced mind of a German, the worship of force and order, are displayed in the thoroughly typical proportions of the building and the treatment of details, such as is, for instance, shown in the windows, the statuary, and the rustication.

TESTS OF BOND BETWEEN CONCRETE AND STEEL.*

Preliminary.—The usefulness of reinforced concrete as a structural material depends on the strength and permanency of the bond between the concrete and the reinforcing metal, and for this reason bond resistance has received much attention from engineers and experimenters. It is said that Thaddeus Hyatt made tests to determine the bond between concrete and iron bars as early as 1876. During the past decade numerous bond tests have been reported. These tests have been characterised by a lack of uniformity in the form of the test specimen and in the methods of conducting the tests, as well as by the wide variations in the values reported for bond resistance. In nearly all the tests thus far published values of maximum bond resistance only have been given. These test results and the discussions called forth by them have furnished the basis for a great variety of opinions as to the value of bond resistance. Many explanations of the source and nature of bond resistance have been given. Various methods have been advocated for increasing bond resistance, and numerous devices have been employed for this purpose.

Present American practice is fairly standardised as to the bond stresses to be used in designing, but a rational basis for the stresses used is lacking and there is a great diversity of practice in the methods of calculating these stresses. There are many phases of bond action which are not now understood. It is evident that the distribution of bond stress in reinforced concrete members under load and the nature and value of bond resistance under given conditions may well be the subject of experimental investigation.

Scope of Bulletin.—The tests reported in this bulletin were undertaken with a view to securing additional information on the nature of the bond resistance of reinforcing bars in concrete, to determining values of bond resistance for a wide range of conditions, and to studying bond action in specimens of different forms. Tests were made on pull-out specimens and on reinforced concrete beams. In both forms of specimen attention was given to obtaining accurate measurement of the slip of bar through the concrete as the loading progressed. In many of the beam tests the slip of bar at various points along its length was measured for different loads. In the discussion of bond resistance the load-slip-of-bar relation has been utilised to a considerable extent. These measurements are useful in indicating the distribution of bond stress. They are particularly significant in the beam tests. In a few of the beam tests the distribution of bond stress was studied by measuring the changes in the stress in the longitudinal reinforcement throughout the length. The values found for bond resistance and the relative bond resistance found in beam tests and pull-out specimens are also interesting features of the investigation.

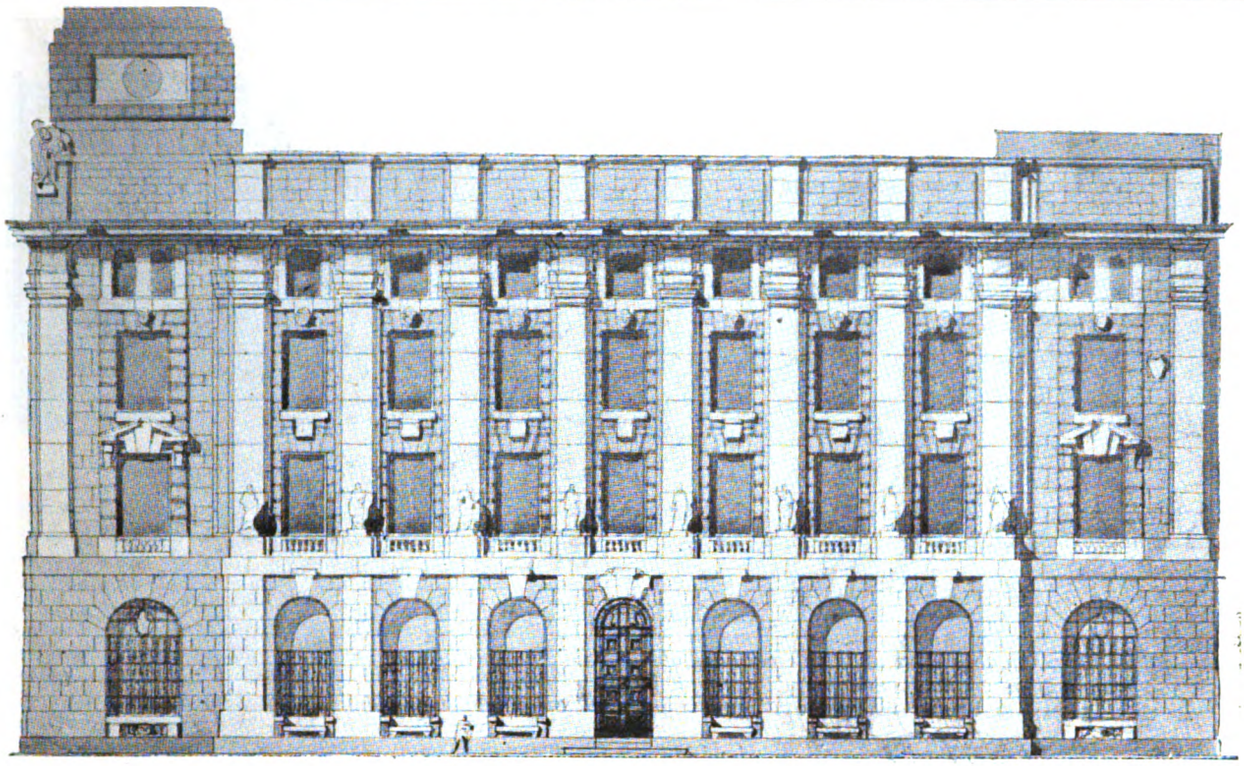
The pull-out tests consisted in applying load to a short reinforcing bar embedded in a block of concrete. The concrete block was generally 8 inches in diameter and 8 inches long, with the bar embedded axially. In certain groups of tests these dimensions were varied. The size of bar used varied between ¼ inch and 1¼ inch. The pull-out tests covered a wide range and included effect of dimensions of specimen, effect of form of bar, effect of conditions of storage, effect of age and mix, using both plain and deformed bars, effect of different methods of loading, bond resistance of concrete setting under pressure, effect of re-applied loads, comparison with the bond resistance of reinforced concrete beams, &c. The deformed bars used included most of the forms in use at the time the work was begun, but it should be noted that the tests with deformed bars were intended to bring out the action of the deformed bar as contrasted with the plain bar and not to determine the value of particular forms of bars.

A special effort was made to determine the behaviour of beams subjected to high bond stresses. The beams tested were 8 by 12 inches in section, with an effective depth of 10 inches. The span length was generally 6 feet; a few beams were tested with span lengths of 5 to 10 feet. All beams were tested with two symmetrical loads, generally at the one-third points of the span. With the exception of six tests, the longitudinal reinforcement consisted of a single bar of large diameter placed horizontally throughout the length of the beam. Both plain and deformed bars were used.

Preliminary Discussion of the Nature of Bond Resistance.—In this preliminary discussion it will be necessary to anticipate certain conclusions which appear in the following pages. The tests therein reported indicate that if

* Abstract from Bulletin of the University of Illinois, U.S.A., on "Tests of Bond between Concrete and Steel." By Duff A. Abrams.

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a bar embedded in concrete is subjected to a tensile stress sufficient to overcome the bond resistance and withdraw the bar, certain definite relations exist between the amount of movement of the bar and the bond stresses developed. In the case of plain bars of ordinary mill surface there is no appreciable movement of the bar until a bond stress about 60 per cent. of the maximum bond resistance has been developed. If the bar is further stressed until the slip amounts to, say, 0.1 inch, it will be seen that the bond-slip relations have undergone numerous changes. After slipping begins, the bond stress increases with further movement of the bar, very rapidly at first, then more slowly until the maximum bond resistance is reached. After the maximum bond resistance is reached, the bond stress drops off with further slip, and at a slip of, say, 0.1 inch, amounts to about 50 to 60 per cent. of the maximum.

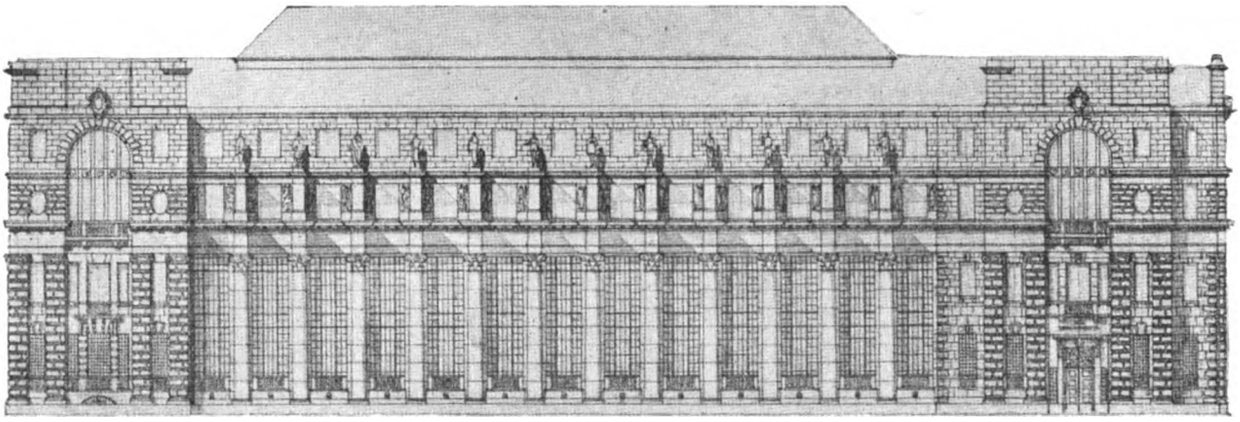
For purposes of this discussion bond resistance may be divided into two elements which we shall designate as (1) adhesive resistance and (2) sliding resistance. The term "adhesive resistance" is used to designate the bond resistance developed before movement of bar with respect to the adjacent concrete begins. "Sliding resistance" is applied to the resistance developed as a result of the movement of the bar. Adhesive resistance may be considered as due to tangential adhesion between the concrete and steel and to static friction. The origin of tangential adhesion is not well understood, but its presence is a matter of universal experience with materials of the nature of mortar and concrete. It is recognised that tangential adhesion does not account for all the resistance developed before slipping begins, but the difference may be attributed to static friction developed by the pressure or grip of the concrete on the bar. As soon as the adhesive resistance is overcome —that is, as soon as the bond stress exceeds the sum of the tangential adhesion plus the static friction—there is a movement of the bar with respect to the adjacent concrete. Although we cannot accurately divide this adhesive resistance into its component elements, the sum of these elements or the total adhesive resistance can be determined, and it is found that under certain conditions it bears a definite ratio to the ultimate bond resistance.

The bond resistance which is developed after slip of bar begins may be said to be due entirely to sliding resistance. Friction between bodies in contact arises primarily from roughnesses of their surfaces; its value is expressed as the product of the coefficient of friction into the normal pressure which exists at the surfaces of contact. The static friction mentioned above is due to the same cause. The roughness of surface in the case of a bar embedded in concrete is due to inequalities in the surfaces of contact which arise from irregularities of section and alignment of the bar and the corresponding conformation of the concrete. The coefficient of friction between concrete and steel for the conditions present in these tests has not been determined. The normal pressure at the surface of the bar may be due to the following causes: (*a*) Initial stresses generated by shrinkage of the concrete during setting and hardening; (*b*) wedging of the bar in the concrete following a movement from its original position. This wedging is caused by the inequalities in the bar mentioned above, and in itself will give an added resistance. Apparently it is augmented under certain conditions by concrete adhering to the bar.

In the above discussion the various components of bond resistance have been mentioned in the order in which they become effective in resisting bond stress. It is evident from these considerations that what has been termed adhesive resistance—that is, the amount of bond resistance which may be utilised before slipping begins—is by far the more significant element. While frictional resistance is of importance, reliance should not be placed on this element of bond resistance.

It was stated above that we cannot accurately divide adhesive resistance into its component elements; however, certain tests do give some indication of the values of these components. A large number of specimens with polished round bars embedded 8 inches in 1-2-4 concrete tested at age of sixty days gave a maximum bond resistance of about 160 lb. per square inch. In these tests frictional resistance (both static and sliding) was reduced to a minimum, and bond resistance after slipping began was almost nil. We may conclude, then, that 160 lb. per square inch represents about what may be expected for the tangential adhesion between steel and concrete of this quality. It seems probable that the same value may be used for the tangential adhesion between any clean steel surface and concrete of the quality used. Round bars with ordinary mill surface tested under the same conditions as the polished bars show slip to begin at, say, 260 lb. per square inch with a maximum bond resistance of about 440 lb. per square inch, developed after a slip of about 0.01 inch had occurred. The difference of about 100 lb. per square inch between the bond resistance developed by the polished bars and by the ordinary bars when slipping begins (corresponding also to the maximum for the polished bars) may be said to represent the value of static friction for the bars of ordinary mill surface above that of polished bars embedded in the same concrete. The additional bond resistance developed

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by the ordinary bars after slipping begins is due to frictional resistance.

The above observations refer primarily to the general case of bond between concrete and plain bars; for deformed bars certain obvious modifications in these statements would be necessary. It will be seen later that the conditions under which the specimen is moulded and tested have an important bearing on the bond resistance developed in any case.

In reinforced concrete beams, where the reinforcing bars are considered to take the main tensile stresses, the phenomena of bond action are complicated by the stiffness of the adjoining concrete in resisting stretching concurrently with the steel. This results in anti-stretch slip. The presence of this stress makes it desirable to distinguish between the phenomenon of anti-stretch slip and the slip produced by ordinary beam action.

Summary.—The tests covered a wide range of conditions, and the results have a significant bearing on the nature of bond resistance, the action of bars of different forms under bond stress, and the behaviour of beams subjected to high bond stresses. The load-slip determinations have given definite information on the nature and distribution of bond resistance. The following is a résumé of the principal observations and conclusions which have been stated and discussed in the text. Paragraphs 2 to 34, inclusive, refer primarily to the results of the pull-out tests.

(1) Bond betwen concrete and steel may be divided into two principal elements—adhesive resistance and sliding resistance. The source of adhesive resistance is not known, but its presence is a matter of universal experience with materials of the nature of mortar and concrete. Sliding resistance arises from inequalities of the surface of the bar and irregularities of its section and alignment together with the corresponding conformations in the concrete. The adhesive resistance must be overcome before sliding resistance comes into action. In other words, the two elements of bond resistance are not effective at the same time at a given point. Many evidences of the tests indicate that adhesive resistance is much the more important element of bond resistance.

(2) Pull-out tests with plain bars show that a considerable bond stress is developed before a measurable slip is produced. Slip of bar begins as soon as the adhesive resistance is overcome. After the adhesive resistance is overcome, a further slip without an opportunity of rest is accompanied by a rapidly increasing bond stress until a maximum bond resistance is reached at a definite amount of slip.

(3) The true relation of slip of bar to bond stress can best be studied by considering the action of a bar over a very short section of the embedded length. The difficulties arising from secondary stresses made it impracticable to conduct tests on bars embedded very short lengths. The desired results were obtained by varying the forms of the specimens in such a way that the effect of different combinations of dimensions could be studied.

(4) Pull-out tests with plain bars of the same size embedded different lengths furnish data which suggest the values of bond resistance over a very short length of embedment, or indicate values of bond resistance which are independent of the length of embedment. Tests with bars of different size which were embedded a distance proportional to their diameters give the true relation when the effect of size of bar is eliminated. Two series of tests of this kind on plain round bars of ordinary mill surface gave almost identical values for bond resistance after eliminating the effect of length of embedment and size of bar, and we may consider that these values represent the stresses which were developed in turn over each unit of area of the embedded bar as it was withdrawn by a load applied by the method used in these tests. These tests showed that for concrete of the kind used (a 1-2-4 mix, stored in damp sand and tested at the age of about sixty days) the first measurable slip of bar came at a bond stress of about 260 lb. per square inch, and that the maximum bond resistance reached an average value of 440 lb. per square inch. If we conclude that adhesive resistance was overcome at the first measurable slip, it will be seen that the adhesive resistance was about 60 per cent. of the maximum bond resistance. This ratio did not vary very much for a wide range of mixes, ages, size of bar, condition of storage, &c.

(5) Sliding resistance reached its maximum value for plain bars of ordinary mill surface at a slip of about 0.01 in. The constancy in the amount of slip corresponding to the maximum bond resistance for a wide range of mixes, ages, sizes of bar, conditions of storages, &c., is a noteworthy feature of the tests. With further slip the sliding resistance decreased slowly at first, then more rapidly, until with a slip of 0.1 in. the bond resistance was about one-half its maximum value.

(6) Pull-out tests with plain round bars show end slip to begin at an average bond stress equal to about one-sixth the compressive strength of 6-in. cubes from the same concrete; the maximum bond resistance is equal to about one-fourth the compressive strength of 6-in. cubes. These values were about the same for a wide range of mixes, ages and conditions of storage. In terms of the compressive strength of 8 by 16-in. concrete cylinders these values would be about 13 per cent. for first end slip and 19 per cent. for the maximum bond resistance.

(7) The tests indicate that bond stress is not uniformly distributed along a bar embedded any considerable length and having the load applied at one end. Slip of bar begins first at the point where the bar enters the concrete, and the bond stress must be greater here than elsewhere until a sufficient slip has occurred to develop the maximum bond resistance at this point. Slip of bar begins last at the free end of the bar. After slip becomes general, there is an approximate equality of bond stress throughout the embedded length.

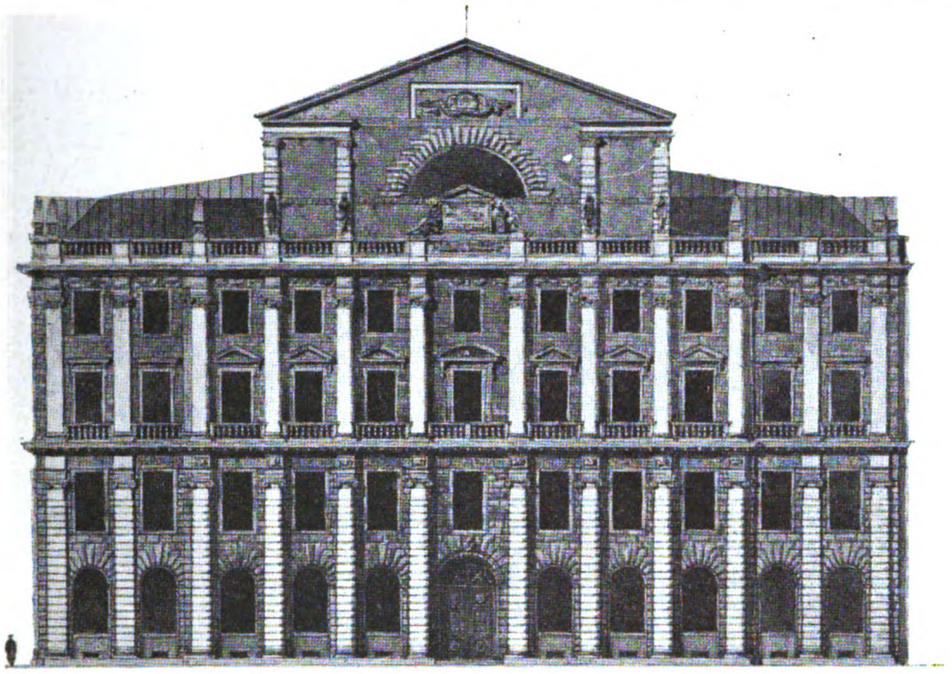
(8) Small bars gave a bond resistance somewhat higher than the large bars during the early stages of the test. This was probably on account of greater irregularity of section and alignment of the smaller bars. The maximum bond resistance was not materially different for bars of different diameters.

(9) Computations based on the elastic properties of the materials indicate that in the pull-out tests the tensile deformation in the bar had a much greater effect on the amount of bond stress which permitted a given slip of bar than had the compressive deformation in the concrete block in which the bar was embeded.

(10) Rusted bars gave bond resistances about 15 per cent. higher than similar bars with ordinary mill surface.

(11) The tests with flat bars showed wide variations

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of bond resistance and were not conclusive. Square bars gave values of unit-stress about 75 per cent. of those obtained with plain round bars.

(12) T-bars gave lower unit bond resistance than plain round bars, but gave about double the bond resistance per unit of length that was found for the plain round bars of the same sectional area.

(13) With polished bars the bond resistance is due almost entirely to adhesion between the concrete and steel. Numerous tests with polished bars embedded in 1-2-4 concrete and tested at sixty days indicated a maximum bond resistance of about 160 lb. per square inch, or about 60 per cent. of the bond resistance of bars of ordinary surface at small amounts of slip. This value agrees closely with tests reported elsewhere, and apparently represents the value of the tangential adhesion between any clean steel and concrete of this quality. The sliding resistance of polished bars was very low.

(14) Tests with polished bars with wedging and non-wedging tapers showed that adhesion was broken for both types of bar at about the same bond stress as in the polished bars of uniform section.

(15) The tests with polished bars with wedging taper showed that after the adhesion was broken a considerable movement of the bar (as much as $\frac{1}{4}$ in. with the smallest tapers) was required before the bond resistance again reached the amount which was at first carried by the adhesive resistance. The amount of movement necessary to restore the bond stress to the value of the original adhesive resistance was inversely proportional to the amount of taper. This indicates that a definite normal compression must be developed in the surrounding concrete before a longitudinal component equivalent to the original tangential adhesion is produced.

(16) It was noted in the tests with plain bars that sliding resistance was due to inequalities of the surface of the bar and to irregularities of its section and alignment. The projections on a deformed bar give an exaggerated condition of inequality of surface or irregularity of section. Adhesive resistance must be destroyed and the usual sliding resistance largely overcome and the concrete ahead of the projections must undergo an appreciable compressive deformation before the projections on a deformed bar become effective in taking bond stress. The tests indicate that the projections do not materially assist in resisting a force tending to withdraw the bar until a slip has occurred approximating that corresponding to the maximum sliding resistance of plain bars. As slip continues a larger and larger portion of the bond stress is taken by direct bearing of the projections on the concrete ahead.

(17) In determining the comparative merits of deformed bars, the bar which longest resists beginning of slip should be rated highest, other considerations being equal. The bond stresses developed at an end slip of 0.001 inch furnished the principal basis of comparison for the different types of deformed bars. At an end slip of 0.001 inch 12 sets of deformed bars of $\frac{3}{4}$-inch and larger sizes embedded 8 inch in 1-2-4 concrete, tested at about 2 months, developed an average bond resistance of 318 lb. per square inch, 4 per cent. higher than the corresponding value for plain bars. At this stage of the test, two sets of deformed bars gave practically the same bond resistance, five sets gave lower values, and five sets higher values than the plain rounds. At an end slip of 0.01 inch, corresponding to the maximum bond resistance of plain bars, the average bond resistance of the 12 sets of deformed bars was 445 lb. per square inch, 10 per cent. higher than plain rounds. At this stage of the test two sets gave about the same values, two sets gave lower values, and eight sets gave higher values than the plain bars. The hooping used in these specimens had a marked effect in increasing the bond resistance even at small amounts of slip.

(18) The concrete cylinders of the pull-out specimens with deformed bars were reinforced against bursting or splitting, because it was desired to study the load-slip relation through a wide range of values. The bond stresses corresponding to an end slip of 0.1 inch are the highest stresses reported for the deformed bars. In only a few tests was the maximum bond resistance reached at an end slip less than 0.1 inch. It should be recognised that, in general, the bond stresses reported for deformed bars at end slip of 0.05 and 0.1 inch could not have been developed with bars embedded in unreinforced blocks. These high values of bond resistance must not be considered as available under the usual conditions of bond action in reinforced concrete members. In the tests in which the blocks were not reinforced, evidence of splitting of the blocks was found at end slips of 0.02 to 0.05 inch.

(19) The normal components of the bearing stresses developed by the projections on a deformed bar may produce very destructive bursting stresses in the surrounding concrete. The bearing stress between the projections and the concrete in the tests with certain types of commercial deformed bars was computed to be from 5,800 to 14,000 lb. per square inch at the highest bond stresses considered in these tests. For bars having projections of different heights and spacing, the bearing stresses on the projections at the highest bond stresses considered were inversely proportional to the bond stress which had been developed by the bar at an end slip of 0.01 inch, the slip at which the projections were beginning to be effective. These considerations show that the ratio of the area of the projections measured at right angles to the bar to the superficial area of the bar in the same length is the proper criterion for judging of the effective bond resistance of a deformed bar. In some forms of bar the bearing stresses must have been much higher

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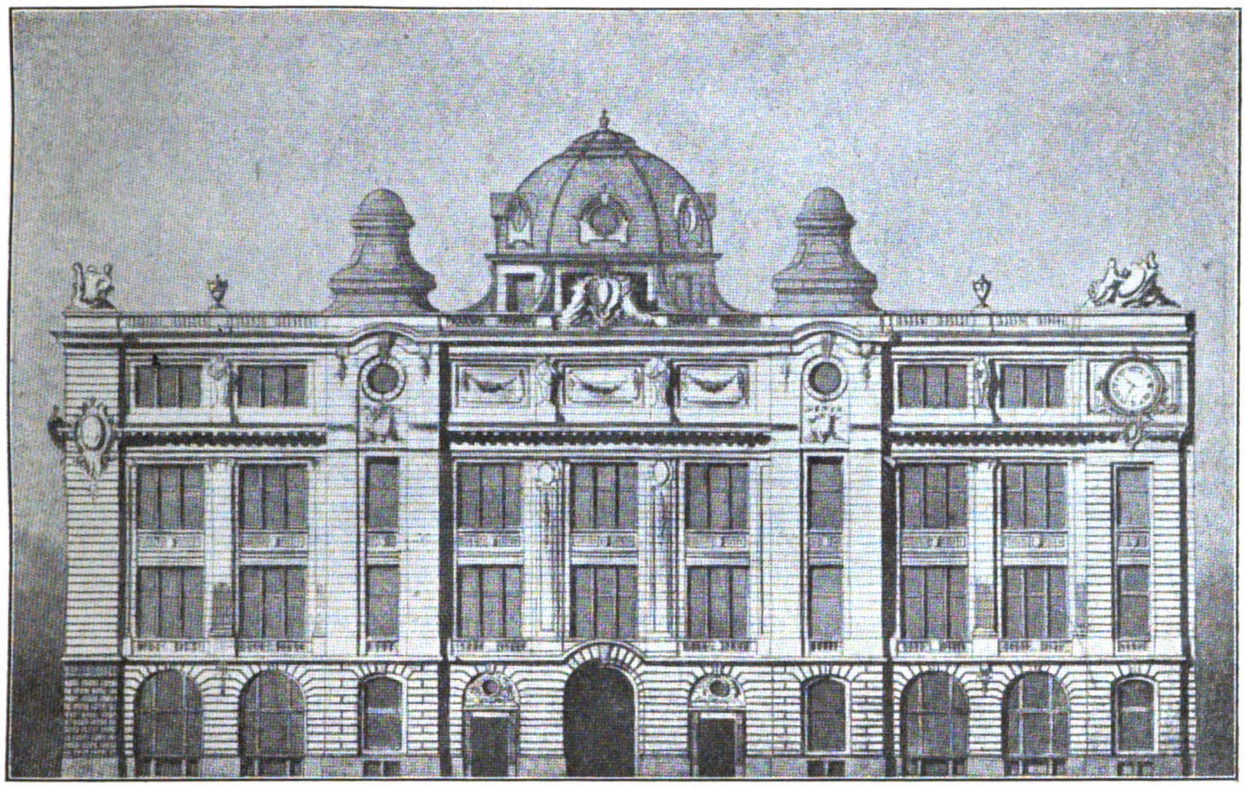
than the values given above. The large slip and the high bearing stresses developed in the later stages of the tests show the absurdity of seriously considering the extremely high values that are usually reported to be the true bond resistance of many types of deformed bars.

(20) Round bars with standard V-shaped threads gave much higher bond resistance at low slips than the commercial deformed bars. The average bond resistance at an end slip of 0.001 inch was 612 lb. per square inch. The maximum bond resistance was 745 lb. per square inch. These were the only deformed bar tests in which failure came by shearing the surrounding concrete.

(21) In a deformed bar of good design the projections should present bearing faces as nearly as possible at right angles to the axis of the bar. The areas of the projections should be such as to preserve the proper ratio between the bearing stress against the concrete ahead of the projections and the shearing stress over the surrounding envelope of concrete. Failure by shearing of the concrete should be avoided. The tests indicate that the areas of the projections measured at right angles to the axis of the bar should not be less than, say, 20 per cent. of the superficial area of the bar. A closer spacing of the projections than is used in commercial deformed bars would be of advantage. Advocates of the deformed bar would do well to recognise the fact that in a deformed bar which may be expected to develop a high bond resistance, a certain amount of metal must be used in the projections which probably will not be available for taking tensile stress.

(22) The 1-inch twisted square bars gave a bond resistance per unit of surface at an end slip of 0.001 inch, only 88 per cent. of that for the plain rounds. Following an end slip of about 0.01 inch, these bars showed a decided decrease in bond resistance, and a slip of 5 to 10 times this amount was required to cause the bond resistance to regain its first maximum value. After this, the bond resistance gradually rose as the bar was withdrawn. Some of the bars were withdrawn 2 or 3 inches before the highest resistance was reached. The apparent bond stresses at these slips were very high; but, of course, such stresses and

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slips could not be developed in a structure and could not have been developed in the tests had the blocks not been reinforced against bursting. Such values are entirely meaningless under any rational interpretation of the tests.

(23) The load-slip curves for twisted square bars are similar to those for polished bars with wedging taper. The twisted bar is essentially a combination of the wedging and non-wedging taper. As the bar is drawn through the concrete the wedging tapers are drawn more firmly against the concrete ahead, while at the same time the non-wedging tapers are separated from the concrete with which they were originally in contact. The drop in the load-slip curves after an end slip of about 0.01 inch shows that the separation of about one-half of the surface of the bar from its original contact and the continued sliding of the flatter portions of the bar, until a large slip has occurred, have a greater influence in reducing the average bond resistance than the increased bearing of the wedging tapers has in raising the bond resistance. The results found with the twisted square bar do not justify its present widespread popularity as a reinforcing material.

(To be concluded.)

MUNICIPAL ART LEAGUE OF CHICAGO.

THE Municipal Art League has decidedly broadened its field this year by proposing to encourage industrial art throughout the entire State of Illinois. Its first step was the offering of four prizes of $25 each at the recent industrial art exhibition, held at the Art Institute. Since then it has organised a committee whose duty is the fostering and encouragement of art in handiwork and manufacture and the "application of art to all phases of Illinois resources and industry." The committee plans to encourage handiwork in the home, such as lacemaking, weaving, crocheting, basketry, and embroidery by women who crave the opportunity to produce beauty, but who need stimulation and instruction. It will try to bring about a closer relation between the manufacturer and the artist in order to improve the design of objects manufactured for daily use, and will also try to conserve crafts which have been mastered in Europe by foreign craftsmen, who find that in this country their efforts are supplanted by machinery.

As a means of accomplishing this the Municipal Art League will offer prizes at the annual art crafts exhibition at the Art Institute to exhibitors showing the best relation of art to an Illinois product, or for such examples of excellence as may be decided upon by the Industrial Art Committee and the Art Institute.

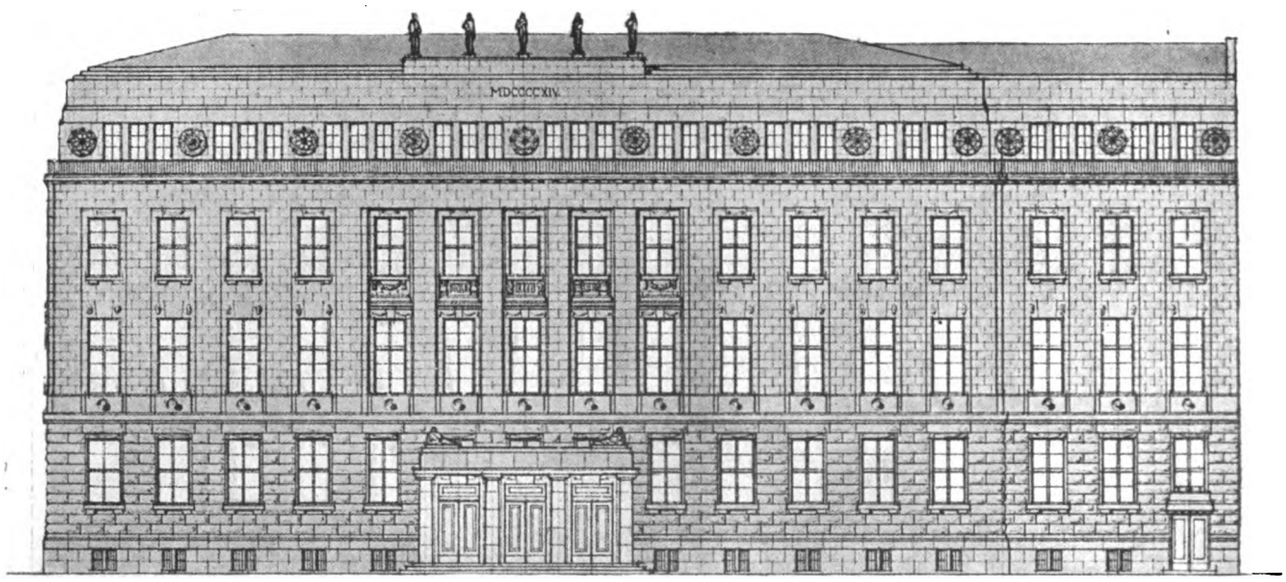
The committee will also endeavour to promote the interest and attendance of the members of the League and affiliated clubs and other citizens at exhibitions and lectures, and especially at the exhibition of art crafts held annually at the Art Institute of Chicago, giving the exhibitors the publicity necessary to bring their work before the people of Illinois. This committee will also assist in the organisation of classes for the encouragement of handicrafts and artistic trades, and co-operate with any existing organisation having a similar object in view.

One of the first steps in the prosecution of this programme will be the making of an art survey of Illinois—locating the schools and individuals that are doing industrial art. This done, the committee expects by that time to have reached a position to do active work in bringing the artist and the manufacturer together. The committee, of which Mrs. F. J. Macnish is chairman, will be composed largely of artists and architects, and will form a sort of advisory board, a go-between for the manufacturer and the artist.

In enlarging its scope the Municipal Art League hopes to accomplish some measure of the work for Illinois that the State Art Commission under the direction of Maurice I. Flagg is doing in Minnesota. Mr. Flagg travels through the country in the summer and visits the cities in the winter, bringing everywhere the message of the practicability of the artistic and showing how handiwork may be made to pay by turning it into the right channels. The Municipal Art League hopes to send a representative through the farming districts with a trunk full of draperies, odds and ends for exhibition, to show the women in the Town Hall or Sunday-school rooms how easy it is to make things right and also profitable.

The recent industrial art exhibition brought out several instances of how the Art League could co-operate with unknown makers of handiwork. Offering prizes for the best work by craftsmen in the State, the League sent out a number of letters of invitation to exhibit. These brought in twenty-five to thirty people that the Art Institute, conducting the exhibition, has never heard of before. A number of these failed to come up to the standards set for the exhibit. Their work was given due consideration, and it was pointed out why, though good, it was not quite as good as it should be. Encouraged by this helpful spirit of co-operation, these craftsmen learned improvement and declared their intention of doing work good enough to pass muster next year. Among these was a woman making baby dresses, and

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THE RUSSIAN BANK FOR FOREIGN TRADE, PETROGRAD. Design by Herr H. JESSEN, Berlin.

another making dolls. Their visit to the exhibition proved an inspiration to better work, they told officials.

The Municipal Art League as a whole this year will assist the Art Institute in conducting the annual exhibition of the works of artists of Chicago and the vicinity. In the past the exhibition has been managed by a committee of the League. It was the pressing need of encouraging Chicago artists that brought the League into being in 1900. It represents seventy-two clubs and 14,000 people outside of the League membership. At dues of $2 the League has 150 member delegates and a regular annual membership of some 250. Each year it buys pictures of Chicago artists and gives prizes for others. Thus it has come to have a little collection of the best work of Chicagoans hung in the Art Institute until such time as the city sees fit to put up a municipal art gallery or afford other accommodation for the works of its sons and daughters. The municipal art gallery of the League, it should be added, is a chronological exhibition of the best works of artists who are, or have been, identified with the art life of Chicago.

The League is also endeavouring to raise a $2,000 fund for sculpture. It already has one for paintings, and from this trust fund is given each year the $100 Municipal Art League prize for portraiture. In lieu of a similar fund for sculpture, Mrs. John C. Shaffer has given for a number of years a prize of $100 for the best piece of sculpture by one artist. In addition there is the William Frederick Grower prize of $100 for the best picture or group of pictures by one artist. A curious feature of these awards is that the whole membership of the League acts as the jury. The results have been pronounced by artists to be as commendable as those of juries of leaders in the profession.

To the energy of Mrs. William Frederick Grower a large share of the League's progress is attributable. As Vice-President of the League she and the President, Ralph Clarkson, have this year increased the number of committees, appointing at the head of each a capable chairman fitted to work in a special direction. A good idea of the scope of the organisation can be gained from the titles of these committees:—

Art Activities in Illinois, Mrs. George J. Farley; Bill Boards, Everett L. Millard; Children's Art Education, Mrs. Homer H. Kingsley; City Streets, Mrs. H. S. Newton; Civics, Elmer C. Jensen; Festivals and Pageants, Kenneth S. Goodman; Industrial Art, Mrs. F. J. Macnish; Juries of Purchase and Awards, Mrs. William Frederick Grower; Membership, Eames MacVeagh; Municipal Art Gallery, Mrs. Marshall F. Holmes; Mural Decorations, Frederic Clay Bartlett; Parks and Playgrounds, Mrs. Leo Heller; Patrons, Ralph Clarkson; Special Picture Fund, Mrs. John E. Meyer; Portrait Prize Fund, Mrs. Sylvester P. Blount; Programme, Mrs. Charles S. Downs; Press, Mrs. Harry A. Bigelow; Social, Mrs. John E. Macdonald; Public Art, Mrs. William B. Frolichstein; and Young Sculptors' Fund, Miss Emily Roche.

ART IN LONDON.

DRY-POINTS AND ETCHINGS BY MR. E. S. LUMSDEN, A.R.E.

THOUGH the exhibition of Mr. Lumsden's work at the Dowdeswell Galleries is of slight compass, it is good of its kind—good, but not of outstanding merit. A lightness of touch, amounting at times to weakness and even insipidity, is apparent; and yet we would not wish to deny a general level of merit, which proves not unattractive. "The Cook Shop" is a notable morceau, where the light-and-shade effects combine with the artist's method of delineation in the production of good work. Virile, too, are such pieces as "The Palace, Jodhpur" (No. 11), "Jodhpur" (No. 16), and "Mosque and Temple"; and noticeable also are "Fort and City" and "The Market Place." Mr. Lumsden shows his appreciation of "values" in such work as "The Palace, Jodhpur," and "The Umbrella" (23); and has a very pleasant way, too, of indicating tender distances, as may be instanced by "The Prayer Flag" and "Jodhpur" (No. 11). "A River Palace" and "The Temple Steps" are very weak, nor are the remaining pieces in any respect noteworthy.

AT THE LEICESTER GALLERIES.

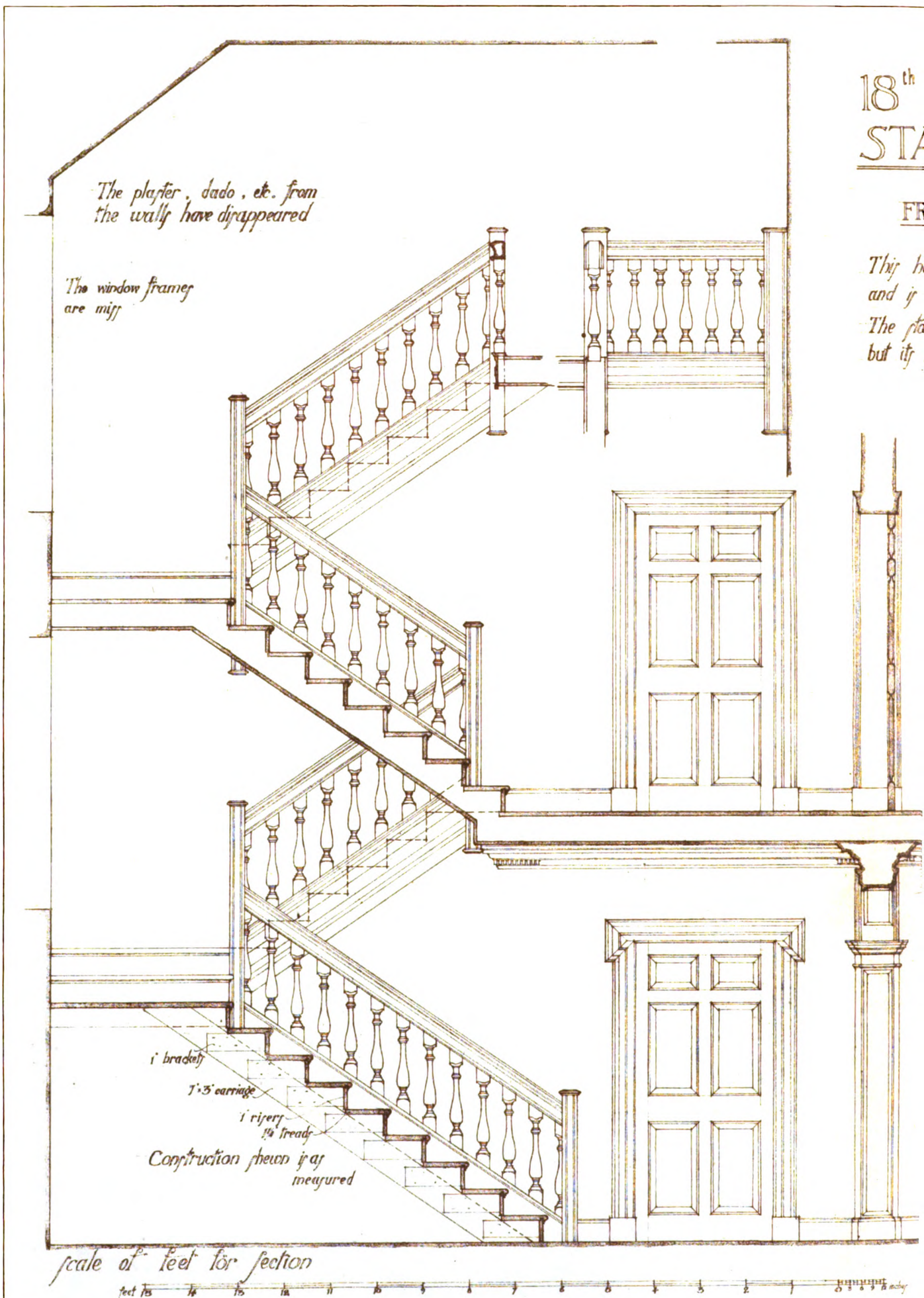
OF the double bill presented to inspection prior place shall be given to Mr. William Strang, A.R.A.; but this priority is due, not to the superior value of his works in relation to Mr. Will Dyson's, but is merely the result of the media used by the former ranking higher than black-and-white art, however good the latter may be.

Indeed, to speak plainly, while we thus give precedence to the media, we do not regard Mr Strang's work as being equally meritorious in scope with the display of drawings. True it is that there are a couple of brilliant exceptions. "The Mother," a life-size portrait study, is quite Titianesque in its compelling forcefulness and vivid realism, and "A Belgian Peasant Girl" is only just less impressive. The "French Priest" is another good piece of portraiture, but less pictorial; we cannot pass over "The Appeal" without favourable notice, for the simple suggestion of a tragedy all too common where men give rein to their lower nature. "A Sailor" is another good portrait study; with these, the best have been mentioned, though "Peace" is prettily conceived; and, amongst the etchings, "The Mourners" and "Despair" deserve favourable notice for their composition and their narrative value, whilst "Ghent Gate, Bruges," is a good piece of chiaroscuro and technique. In regard to the other two dozen works silence is the most charitable act, as assuredly crude colouring and crude composition are not art.

Mr. Dyson's works are much more satisfactory en masse, even if there is nothing on the same lofty plane as the best of Mr. Strang's. Were humour the sole, or even the principal, object of the drawings, they might well be regarded as a failure, for true humour needs no cap and bells and

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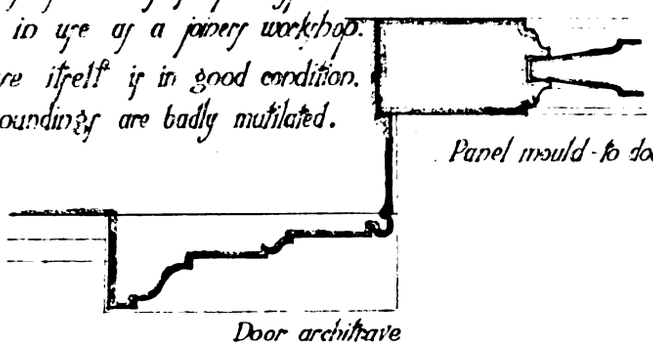
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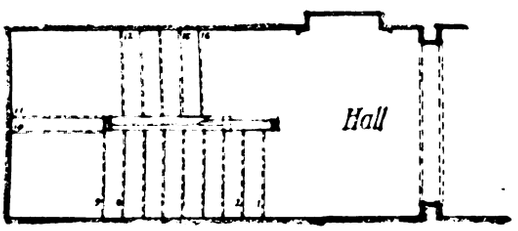
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CENTURY
AIRCASE

ROM HOUSE IN SUNDERLAND

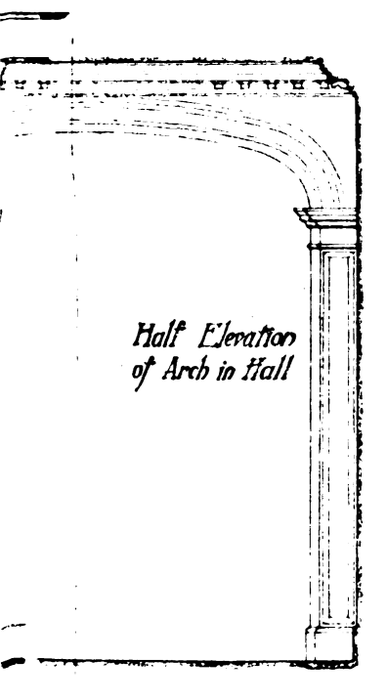
louse is of a very simple type;
now in use as a joinery workshop.
Staircase itself is in good condition.
surroundings are badly mutilated.



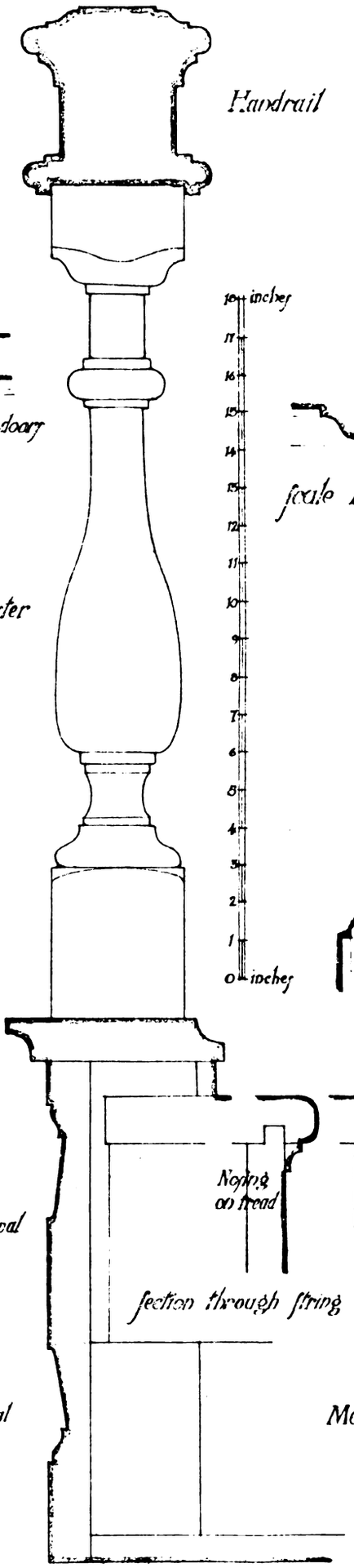


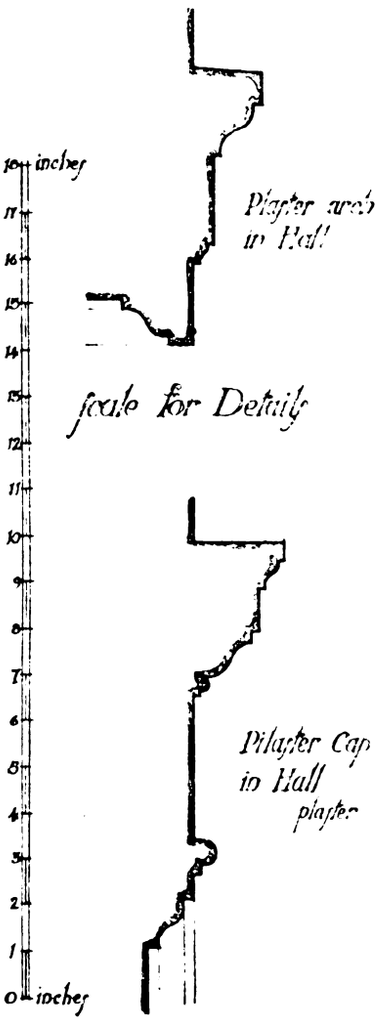
Plan of Ground Floor

Scale of feet for plan









Measured and drawn
July. 1914.
E. BROWNE

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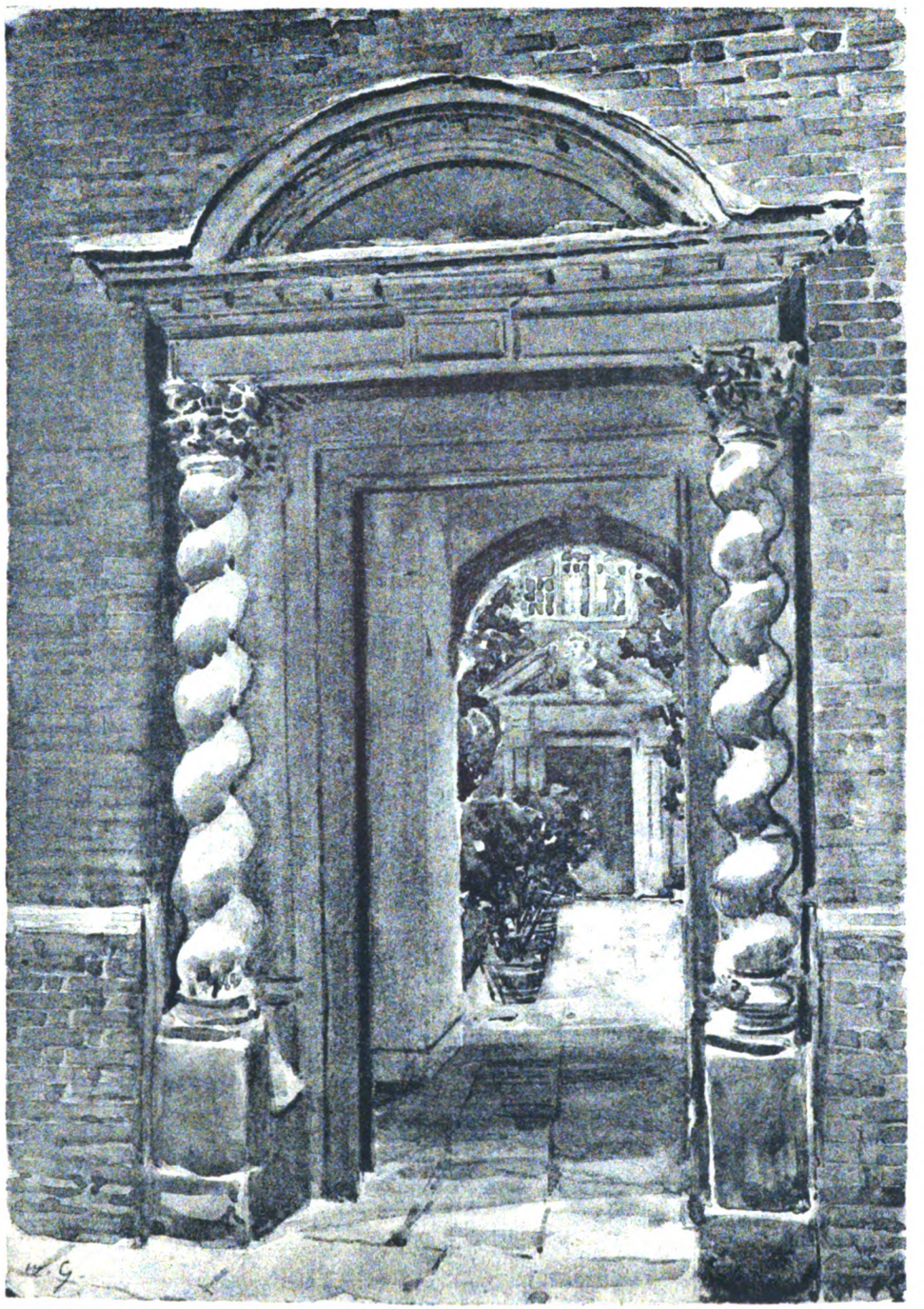
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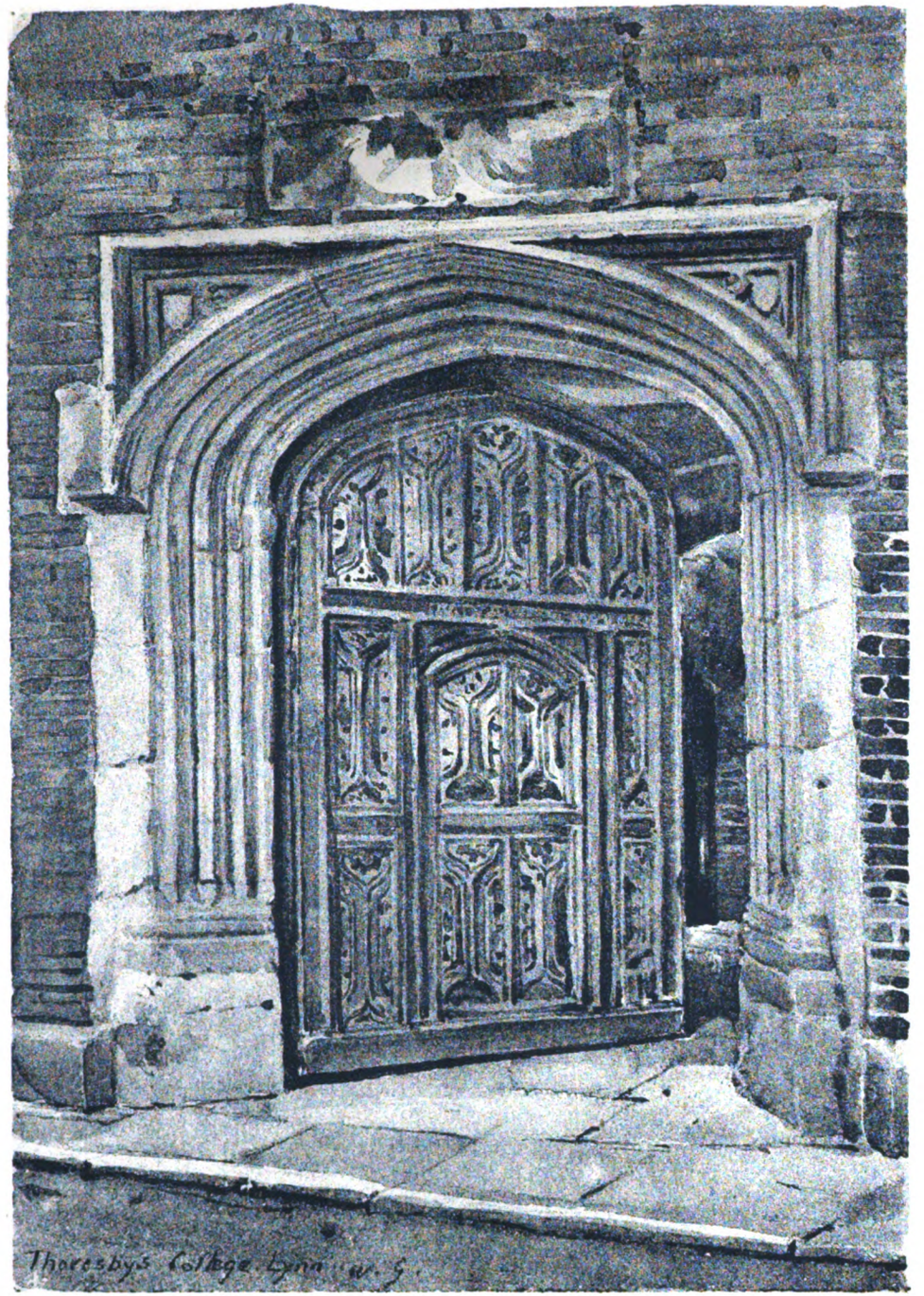
ST. NICHOLAS' STREET, KING'S LYNN.



QUEEN'S STREET, KING'S LYNN.

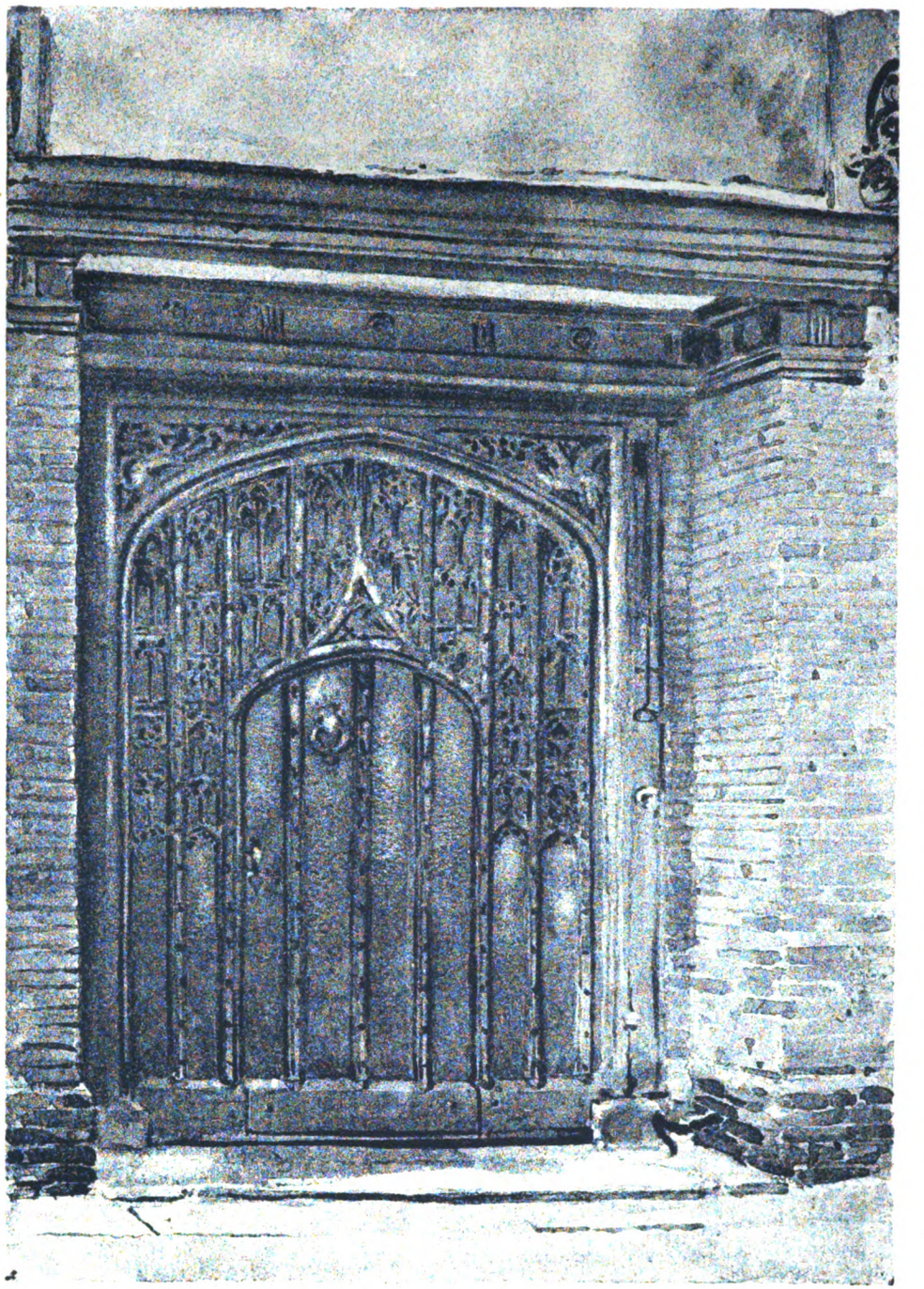
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ST. NICHOLAS' STREET, KING'S LYNN.



THORESBY'S COLLEGE, KING'S LYNN.

QUEEN'S STREET, KING'S LYNN.



VICARAGE, KING'S LYNN.

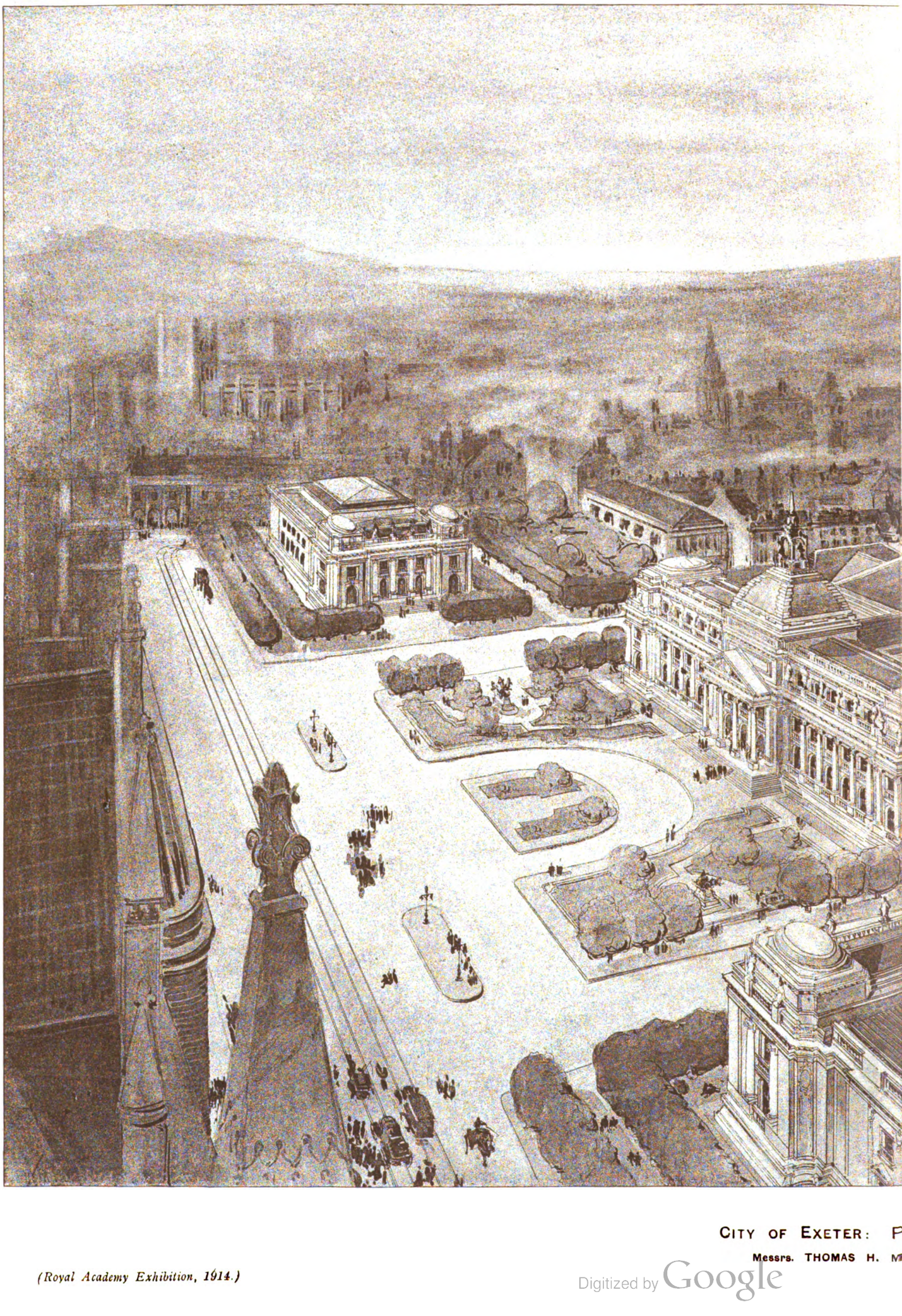
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FROM WATER COLOUR DRAWINGS BY MR. W. GANDY.

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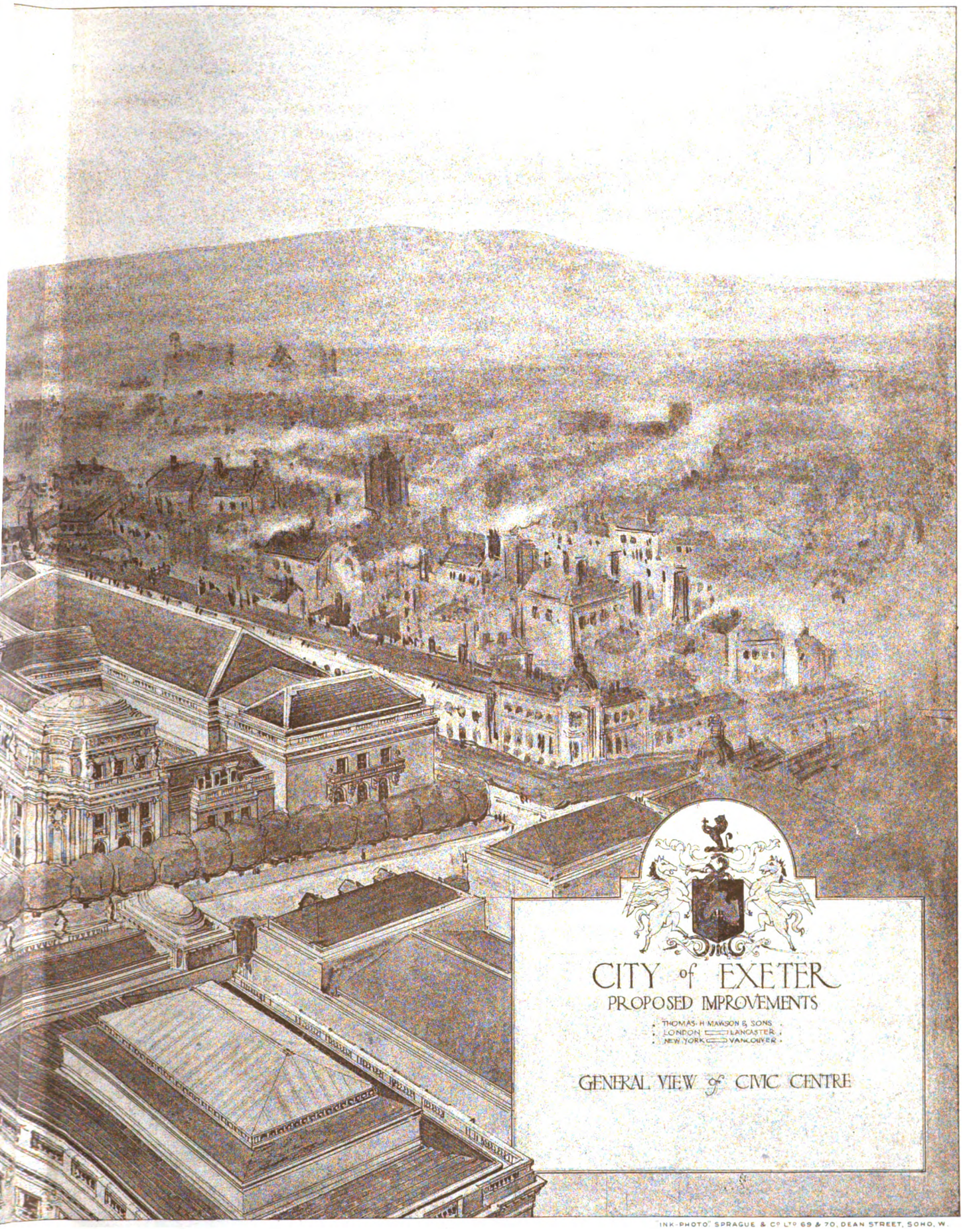


CITY OF EXETER: P

Messrs. THOMAS H. M

(Royal Academy Exhibition, 1914.)

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PROPOSED IMPROVEMENTS.

TAWSON & SONS, Architects.

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bauble, being all-sufficient in its own display. Here, however, something grimmer, something deeper than humour is the appeal held out—and very successfully so held. Regard such works as "A Place in the Sun—the Modern Icarus," "Circe," "Modern Science and Prehistoric Savagery," "City of the Faithful," and (perhaps the very best of all) "Shade of Bismarck." Second only to these are such drawings as "Honour is Satisfied," "Give him his Due" (the Iron Cross), "Mit Compliments from Headquarters," "Voice of Heaven,' "'In the Bazaar," and "Wonders of Science"; in some of the other drawings there is a lamentable excess of caricature and poverty of draughtsmanship, but the general level of work is of a notable quality. Truly this lithographic work of Mr. Dyson's provides "sermons in stones," though, as we have indicated, there is not "good in everything."

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Amersham.—Proposed working-class dwellings, Back Lane.

CHESHIRE

Altrincham.—Council school, Prince's Road.

CUMBERLAND.

Carlisle.—Technical Institute and School of Art. Open-air school.

Cleator Moor.—Proposed working-class dwellings (£7,000).

DERBYSHIRE.

Derby.—Public elementary school, Nightingale Road (£12,000).

DEVON.

Torquay.—Villa. Mr. F. G. Moore, architect. Messrs. Atkin, Maunder & Co. (of Paignton), contractors (£950).

DORSET.

Weymouth.—Proposed Council houses, Granville Road.

DURHAM.

Durham.—Workhouse: proposed new infirmary.

Houghton-le-Spring.—Four houses, Stott's Pasture, for the Lambton and Hetton Collieries, Ltd.

Sherburn Hill.—Motor garage, for the Co-operative Society, Ltd.

Ushaw Moor.—House: addition, for Mr. M. Lough.

ESSEX.

Chignal.—Britton's Hall Farm: re-modelling, for Essex Education Committee. County architect.

East Hanningfield.—Four cottages, for Chelmsford R.D.C.

Epping.—Special Subjects Centre (£850).

Grays.—Orsett Joint Hospital: pavilion (for twenty-four beds), for H.M. War Department. Mr. C. M. Shiner, A.R.I.B.A., architect, The Gate House.

Great Dunmow.—Council School: proposed enlargement.

Manningtree.—Council school, Horsley Cross, Mistley.

Rayleigh.—Special subjects Centre (£500).

Shoeburyness.—Council school, Richmond Avenue: enlargement (£4,200).

South Benfleet.—Proposed Council school, Hopes Green.

Thundersley and West Thurrock.—Council schools (£2,900 and £2,600 respectively).

GLOUCESTERSHIRE.

Bristol.—Hospital, Novers Hill: proposed extension (£7,700). City engineer.

HAMPSHIRE.

Itchen.—Proposed isolation hospital.

HEREFORDSHIRE.

Ledbury.—Proposed thirteen workmen's dwellings, Belle Orchard (£2,800).

HERTFORDSHIRE.

St. Albans.—Children's homes, for B.G. Messrs. Mence & Finn, architects, 11 St. Peter's Street.

KENT.

Broadstairs.—Houses, Cecilia Road. Mr. A. Foster, architect, 1 St. Peter's Road.

Canterbury.—Proposed Council school, Wincheap (for 150 places).

Maidstone.—No. 57 Bower Lane: additions and alterations, for Messrs. Bishop & Bishop.

No. 41 Union Street: bakehouse, for Mr. W. G. Hougham.

Margate.—Proposed workmen's dwellings (£9,000).

Tenterden.—Proposed Council school.

LANCASHIRE.

Bispham, Little.—Two houses, for Mr. H. Leete.

Bolton.—Proposed elementary school, Bradford and Crescent Roads, Great Lever.

Lancaster.—Houses: re-construction, for the Gas Committee.

Liverpool.—Proposed elementary school in Corinthian and Stanley Park Avenues.

MIDDLESEX.

East Finchley.—Holy Trinity Vicarage: additions and alterations.

Uxbridge.—Workmen's cottages. Messrs. Lovell & Sons, contractors.

Yiewsley.—Three cottages, Wise Lane, West Drayton, for Mr. Hitchcock.

NORFOLK

Rollesby.—Two cottages, for Rev. R. J. Tacon.

NORTHAMPTONSHIRE.

Irthlingborough.—Factory. Mr. R. J. Williams, architect, Market Place, Kettering.

SHROPSHIRE.

Bishop's Castle.—Village P.M. Chapel, Asterton.

SOMERSET.

Midsomer Norton.—Proposed infants' Council school (for 120 places).

STAFFORDSHIRE.

Ipstones.—C.E. School, Foxt: improvements.

Newcastle.—Tuberculosis hospital and dispensary, for the Staffordshire, Dudley, and Wolverhampton Joint Committee (£570).

Pelsall.—Infants' Council school (for 258 places). Messrs. H. Gough & Son, contractors, Dudley Road, Wolverhampton (£3,200).

Wednesbury.—Tuberculosis dispensary (£520).

Weeford.—C.E. School: proposed alterations and improvements.

SURREY.

Banstead.—Proposed ten workmen's cottages. Mr. A. C. Williams, architect, 53 Doughty Street, London.

Croydon.—Infants' Council school, Beddington.

Mitcham.—Council school, Western Road.

Sutton.—Council school, Robin Hood Lane.

SUSSEX.

Angmering.—Four cottages, for East Preston R.D.C.

Bognor.—"The White Horse" public-house, South Bersted: re-building, for Messrs. Henty & Co.

Hastings.—Proposed central fire station, Havelock Road.

Horsham.—Nos. 62 and 63 West Street: alterations. Mr. A. E. Tutte, architect, 58 London Road, Portsmouth.

WARWICKSHIRE.

Ansley.—Three cottages, for the Ansley Coal and Iron Company.

School House: alterations.

Birmingham.—West Heath Hospital: extensions. Mr. W. H. Ashford, A.R.I.B.A., architect, 32 Paradise Street.

Hall Green.—Proposed Council school (£16,000).

Nuneaton.—Proposed children's homes, for B.G. Mr. E. E. Shepherd, architect, New Bridge Street.

WORCESTERSHIRE.

Stourbridge.—Proposed working-class houses.

YORKSHIRE.

Bolton-upon-Dearne.—Workmen's dwellings (£71,000).

Sheffield.—School Medical Department, Sims Street (£10,200).

Manor School; extensions (£4,000).

Silkstone.—Newhall Camp: hospital. Mr. J. H. Taylor, M.I.C.E., engineer, Manor House Offices.

Sowerby Bridge.—Public Baths: reconstruction.

Whitby Bridge.—Houses. Messrs. Holt & Shephard, architects, 91 Carlton Street, Castleford.

York.—Fever Hospital: scarlet fever pavilion (£4,000) and laundry (£1,400).

WALES.

Carmarthen.—Cottage home, for B.G. (£1,000). Mr. G. Morgan, architect, 24 King Street.

Llandaff.—Episcopal Palace: reconstruction. Mr. W. D. Caröe, F.R.I.B.A., architect, 3 Great College Street, Westminster, London.

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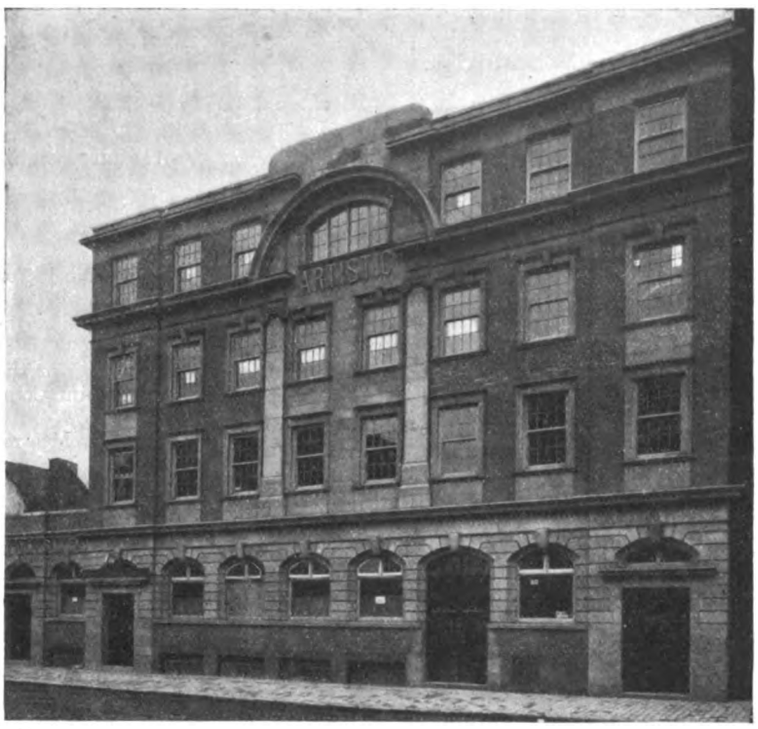
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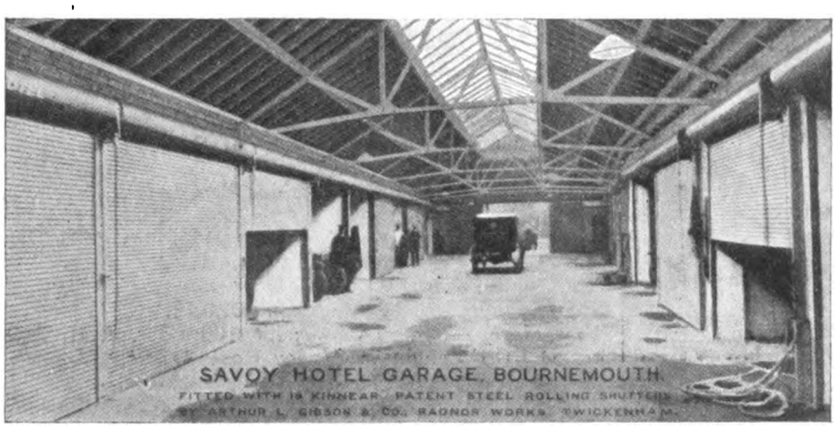
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WALES—*Continued.*

Llansamlet.—House, Birch Grove, for Mr. H. Jones.

Morriston.—House, Llangyfelach Road, for Mr. A. L. S. Williams.

SCOTLAND.

Ayr.—Heathfield Hospital: extension (£7,000 to £8,000). Burgh surveyor.

Findochty.—Methodist church. Mr. W. Hendry, architect, 91 West Church Street, Buckie.

Glasgow.—Three tenements of houses, Moncur and Main Streets, for the Corporation.

Lockerbie.—Public slaughterhouse, Goods Station Road (£1,200).

Musselburgh.—Elementary Board School, Campie House, for 750 places.

Nairn.—Hospital.

Perth (near).—Five houses and three steadings, Middlebank, for Board of Agriculture, Scotland.

IRELAND.

Clondrohid.—A.O.H. Hall. Mr. J. A. M'Carthy, C.E., architect.

Dromore.—Proposed tuberculosis sanatorium for Co. Down.

Limavady.—Twenty-eight Council cottages (£4,760).

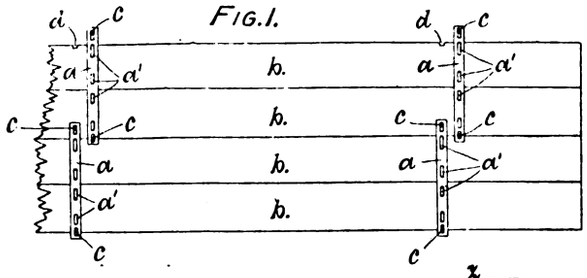
Limerick.—Picture theatre, George Street. Mr. J. O'Malley, architect, 10 Glentworth Street.

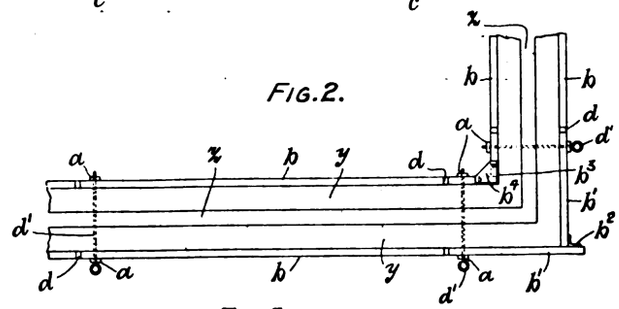
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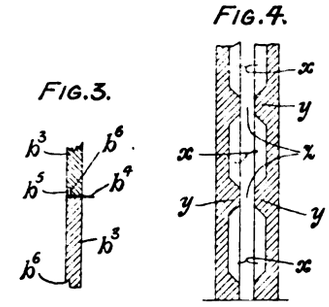
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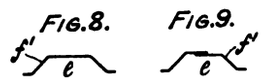
The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

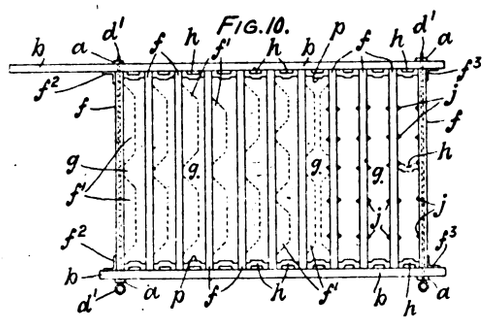
No. 28,799. Dec. 13, 1913.—Improvements in and connected with structures of concrete and apparatus therefor. W. J. Ayles, Broughton, Stockbridge, Hants. This invention has reference to the construction of walls or buildings of concrete, wherein the concrete is moulded between boards arranged with a space between them for receiving the wet concrete, which is allowed to partly set before removing the boards. The invention has for one of its objects to provide improvements rendering serviceable for the construction from what is generally known in the building trade as "compo," which comprises a mixture of cement and sand, and which term covers wet concrete, or the like, of hollow walls in situ, and also of blocks or parts of walls or structures for the construction or building of hollow walls—that is, the improvements render the apparatus or shuttering suitable for either purpose, and also enable the various boards used as shuttering for supporting and moulding the wet concrete to be self-adjusting, so that closed and comparatively tight joints are obtained. Fig. 1 is a side elevation of boarding or shuttering arranged for building and erecting in situ from wet concrete, or the like. Fig. 2 is a plan of a wall in course of construction, with the shuttering in position. Fig. 3 is a vertical section of a detail of a corner piece. Fig. 4 is a vertical section of part of a wall provided with continuous horizontal and vertical bevelled-web parts on the inner surfaces of the hollow wall, the webs in both directions constituting hollows or recesses on the inner surfaces. Figs. 8 and 9 are sectional views of two kinds of cores for use in forming the webs with hollows or recesses between them. Fig. 10 is a plan of a mould built up from the shuttering or boarding shown in figs. 1 and 2, and held together by bolts passing through metal plates attached to the boards, such metal plates serving the same purpose when used for building in situ. Metal plates a extend transversely over the outer surfaces of the boards b, and are attached thereto by screws passing through slots a^1 in the plates into the boards. The metal plates extend beyond the longitudinal edges of the boards, and are provided with apertures c. Notches d *are* provided in the longitudinal edges of the boards for bolts d^1, which are also passed through the apertures in the projecting edges of the metal plates for connecting together the boards b used for shaping or moulding the exterior surfaces of the walls to be built, such bolts extending transversely of the wall being built, and being adapted to be withdrawn from partly set portions when the boards are removed. The notches d in the edges of one set of boards correspond with the apertures in the lower ends of the plates a on the set of boards disposed on the first-mentioned set, so as to enable the bolts passing through to engage with the notches and retain the second set in position. Cores e are employed for shaping the interior of the wall placed between the boards b. The cores are of collapsible or other construction, so that the cavities formed thereby may be varied as desired. To connect together two or more rows of boards, the metal plates a attached to different parts of the length of one of the boards b are so arranged as to correspond with the notches











d in the edges of the adjacent boards b, so that when the boards are arranged one above the other, edge to edge, the depending lower portions of the metal plates a on one board will be in line with the notches d of the boards on which the upper boards are supported. In fig. 1, with the metal plates a arranged at different distances from the ends of the boards, the ends of the boards are in line. In fig. 2 moulding boards b are shown in position against each outside surface of a wall in course of construction in situ of wet concrete. A corner or angle part b^1 is shown between moulding boards b, held together at their meeting edges by an angle plate b^2 and fastening means, and by inside moulding posts or boards b^3, provided with a plate b^4, which is secured to the upper end of the post or board b^3, and extends inwardly as shown, and is also provided with a tongue b^5, as shown in fig. 3, which engages with a corresponding notch or recess b^6 formed in the outside edges of the inside corner or moulding board next to the inside corner moulding board. The space z between the inner and outer parts of the wall in figs. 2 and 4 is that between web portions y formed on the inner surfaces of the inner and outer parts; the width between the parts of the walls where the webs exist is less than the width occurring between the parts formed with the spaces or recesses x. The width of the space z between the web portions y, and the width between

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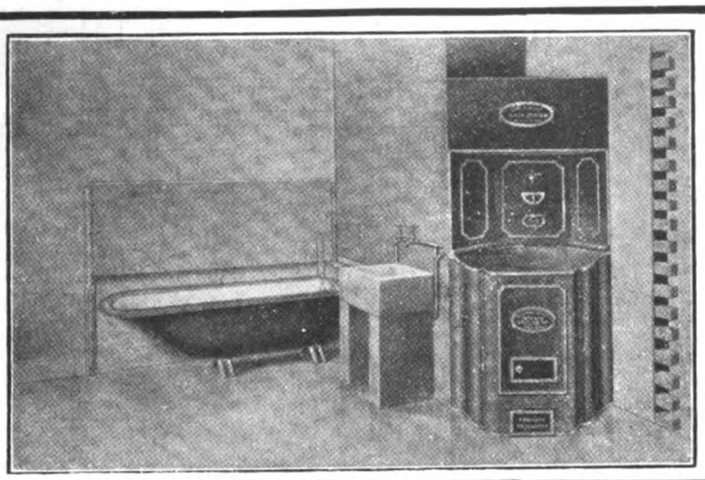
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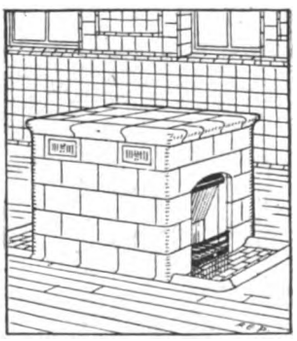
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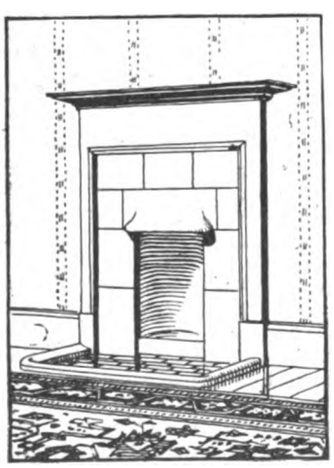
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the parts where the spaces or hollow parts or recesses x occur, relatively to the thickness of the wall, are shown in fig. 4. In this figure the web portions y have angular sides. These different forms of webs are constructed by the employment of different forms of cores. Two forms of cores are shown in figs. 8 and 9, one of one piece of material, and the other of two pieces and collapsible. Where the moulding boards or shuttering are employed for making blocks or slabs from wet carbon, the boards are arranged opposite to each other, as shown in fig. 10, at a greater distance apart than as shown in fig. 2, and between these boards the partitions f are arranged at right angles thereto, and serve to divide the space between the boards into a number of compartments g. The boards and partitions are secured together by bolts passing through the apertured metal plates a on opposite boards. The spacing of the compartments is obtained by spacing members h, nibs or projections j being provided at distances throughout the length of the partitions for maintaining the spacing members h in position, and for making blocks of different widths. A spacing member is shown in dotted lines in an intermediate position at the right-hand end of fig. 10. The partitions and spacing members are held firm in position by means of angle plates f^2 and f^3, the partition at one end bearing against the angle plates thereat, and the spacing members and other partitions being tightened up against the first-mentioned partition by screws or the like (not shown) passed through angle plates f^3. Dec. 16, 1914.

PATENT SPECIFICATIONS PUBLISHED DECEMBER 31, 1914.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 20,167. Sept. 6, 1913.—H. E. Cooper, John Sayer, and the British United Shoe Machinery Co., Ltd., Union Works, Belgrave Road, Leicester. Machines for inserting nails or fasteners.

24,871. Nov. 1, 1913.—W. G. Rhodes, D.Sc., Royal Technical Institute, Salford, Manchester. Variable candle-power incandescent electric lamp and switch.

25,593. Nov. 8, 1913 (dated under International Convention Nov. 9, 1912).—Emanuel Mende, Tscharuerstr 7, Berne, Switzerland. Method and apparatus for making a material for the production of a monolithic mass of artificial stone and for other purposes.

27,071. Nov. 25, 1913.—R. C. Acutt, P.O. Box 36, Germiston, Johannesburg, Transvaal. Apparatus for suspending pictures, plaques, and other articles on walls.

28,799. Dec. 13, 1913.—W. J. Ayles, Broughton, Stockbridge, Hants. Structures of concrete and apparatus therefor.

28,897. Dec. 15, 1913.—F. G. Hicks, 51 Park Road, Wandsworth. Vacuum cleaning apparatus.

28,454. Dec. 10, 1913.—G. H. Harris, 17 Gibbeson Street, Lincoln, and Alfred Grounsell, 9 The Strait, Lincoln. Window catches.

28,641. Dec. 11, 1913.—S. R. Parkes, Pretoria Works, Willenhall. Automatic coin-freed locks.

27,571. Dec. 1, 1913.—F. W. Smith, 5 Thornbury Avenue, and H. S. A. Warren, 79 Millbrook Road, Southampton. Fire extinguishing and alarm apparatus for use on board ships and in large buildings.

29,058. Dec. 16, 1913.—F. A. Winslow, 4600 Harrison Street, Chicago, Ill., U.S.A. Window structures.

1,196. Jan. 16, 1914.—Milton Murray, William's Wharf, Mathews, Virginia, U.S.A. Fence posts and method of manufacturing same.

1,557. Jan. 20, 1914.—Arthur Grafton, Alderston, 43 Thornbury Avenue, Southampton. Burners for gas fires.

29,693. Dec. 24, 1913.—E. S. Sinnott, Tuffley Grange, Glos., county surveyor for Gloucestershire. Road construction.

10,528, 10,529. April 28, 1914.—B. E. De Witt Stafford, Corner Forbes Street and Mayran Avenue, Pittsburg, Penn, U.S.A. Flexible stay bolts.

10,797. May 1, 1914 (dated under International Convention May 7, 1913).—I. L. Halman, 32 Webster Street, Brookline, Norfolk, Mass., U.S.A. Liquid cleanser which may be used for removing paint, varnish, or enamel.

11,972. May 15, 1914.—Henry Bisseker, 11-15 New Bartholomew Street, Birmingham. Taps or stopcocks.

12,605. May 22, 1914.—George Pape and A. R. Wood, of the Carron Co., Carron, Stirling. Electric heating apparatus.

4,158. Feb. 18, 1914.—Samuel Yarwood and A. E. Yarwood, 462 Staniforth Road, Sheffield. Spindles or arbors of wabble saws or cutters.

4,590. Feb. 23, 1914.—W. C. M. Pettingill, 47 Francis Road, Edgbaston. Electric light bulb.

4,975. Feb. 26, 1914.—The Richmond Gas Stove and Meter Co., Ltd., Academy Street, Warrington, Lancs., and H. M. Thornton, "Birstal," Rose Walk, Purley, Surrey. Plate rack and the like for gas cookers and the like.

15,640. June 30, 1914.—G. C. Drake, 26 Deronda Road, Tulse Hill, London. Box and bolt staples for latches and locks.

19,006. Aug. 24, 1914 (dated under International Convention Sept. 1, 1913).—Maurice Crofts, 179 Elizabeth Street, Sydney, New South Wales. Ladder.

20,825. Oct. 10, 1914.—F. P. Aylwin, 11 Haymarket, S.W. Portable houses.

12,917. May 26, 1914 (dated under International Convention May 28, 1913).—A. J. Toussaint, 10 rue Sedaine, Paris. Improved gas supply arrangement for kitchen stoves.

15,552. June 29, 1914.—Henry Marsden, Room 24, Imperial Life Building, Toronto. Automatic fire alarms.

10,515. April 28, 1914.—W. D. Frazer, of Dain, R. M. Dyer and A. A. Dyer, of Richwood, Nicholas, West Virginia, U.S.A. Stoves and heating apparatus in connection therewith.

9,546. April 17, 1914.—R. C. Turner, 182 Tulse Hill, S.W. Gas cooking stoves and the like.

11,154. May 6, 1914.—Harry Parkinson, The Horrocksford Lime Co., Ltd., Clitheroe, Lancs. Tarred macadam.

12,228. May 18, 1914 (dated under International Convention, May 19, 1913).—Desire Mureau, 94 Rue Lafayette, Paris. Drawer locks.

14,169. June 12, 1914.—James Cobban, architect and surveyor, Haddo House Estates, Aberdeen. Ventilating ridge suitable for byres and other like buildings.

14,784. June 19, 1914 (dated under International Convention, June 19, 1913).—J. S. Fasting, 26 Allegade Frederickberg, near Copenhagen. Grinding or crushing machine.

18,528. Aug. 11, 1914.—W. H. Foster, Central Brass Works, Woolshops, Halifax. Bell cocks for cisterns.

18,940. Aug. 22, 1914.—A. B. Williams, 13 Weaman Street, Birmingham. Lavatory basin, bath, and like plugs.

7,365, 7,366, 7,367. March 23, 1914.—F. D. Lambie, Upper Montclair, Essex, New Jersey, U.S.A.—Moulds for building monolithic houses.

7,378. March 24, 1914.—John Goodenough, 14 Graig View, Ynys-ddu-Mon. Door fastener.

Any of the above specifications may be obtained from J. D. Roots & Co.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Re Recruiting for the Army.

SIR,—I should be glad if you would allow me space in your paper to bring to the notice of your readers the purpose and aims of the Architects' War Service Bureau.

Since the war started we have successfully worked as a recruiting agency, more especially for the Royal Engineers, the 2nd London Sanitary Company, and the "Artists." We are now in a position to advise men about all branches of the Service and to help them to enlist where they would be most useful.

Skilled men of all kinds are urgently needed in addition to ordinary recruits, and I shall be glad to advise all applicants if they will communicate with me, or call at 18 Tufton Street, S.W.—Yours faithfully,

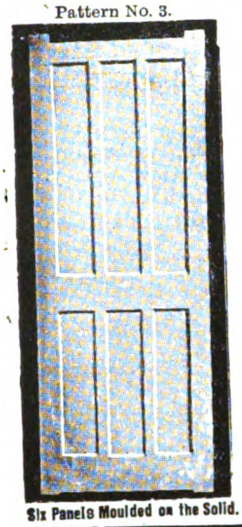
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WE congratulate Sir John Cowan on the honour of knighthood which he has enjoyed for the last week. To our readers he will be best known as the managing director of Messrs. Redpath Brown & Co., Ltd., the constructional engineers. In Edinburgh he is also a prominent figure in public and especially philanthropic circles.

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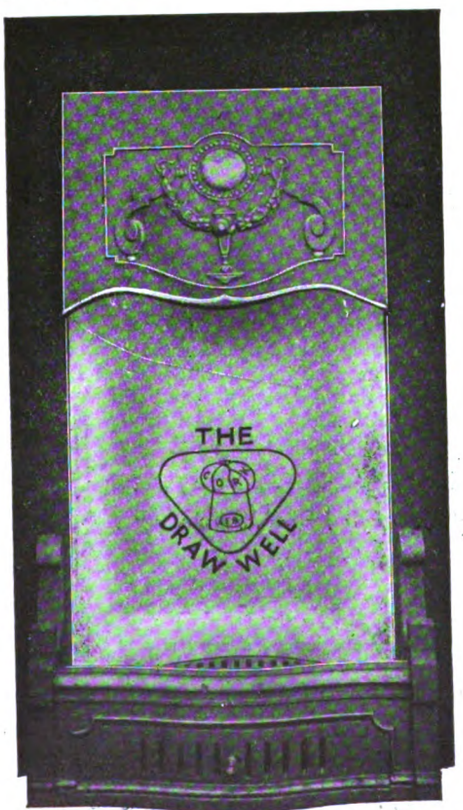


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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 8, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive sketch plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

DONCASTER.—Jan. 23.—The Town Council invite architects to submit designs for the laying out of a site of about twenty acres at Carr House, Doncaster, and the erection of 102 workmen's dwellings on four acres thereof on Garden City lines. Copies of the particulars and conditions of the competition may be obtained at the office of Mr. R. A. H. Tovey, Town Clerk, Doncaster.

LIVERPOOL.—Feb. 8.—The Corporation invite designs for workmen's dwellings, to accommodate about 500 persons, and proposed to be erected on the site known as the Rathbone Street area. Premiums of £100, £50 and £25 respectively are offered for the first three selected designs, and the Council have appointed Mr. Henry Hartley, F.R.I.B.A., as assessor. The first premiated design will become the property of the Corporation. A plan of site, together with a copy of the printed conditions and instructions, will be forwarded to the applicant on payment of a deposit of £1 1*s.*, which will be returned on the receipt of a bona-fide set of drawings. Mr. E. R. Pickmere, town clerk, Municipal Offices, Liverpool.

MACCLESFIELD.—Jan. 31.—The Lands and Town Development Committee invite competitive plans, &c., for a housing scheme from the local architects and builders. Plans, specification, and estimate must be deposited not later than January 31, 1915, marked on the outside cover, "Housing Scheme." Mr. S. C. Baggott, Borough Surveyor, Macclesfield.

CONTRACTS OPEN.

ANGMERING.—Jan. 25.—For erection of four cottages at Angmering, Sussex, for the East Preston Rural District Council. Mr. A. Shelley, clerk, Town Offices, Littlehampton.

ASHTON-UNDER-LYNE.—Jan. 16.—For erection of Mossley Road Council School, to accommodate 600 children, for the Ashton-under-Lyne Education Committee. Deposit £3 3*s.* Messrs. Eaton, Son & Cantrell, architects, Stamford Street, Ashton-under-Lyne.

BARROW-IN-FURNESS.—Jan. 11.—For erection of permanent tripe-dressing sheds and a gut-scraping shed at the Public Abattoirs, for the Corporation. The Borough Engineer and Surveyor, Town Hall, Barrow-in-Furness.

BECKFORD (GLOS.).—Jan. 9.—For erection of six cottages at Beckford, for the Winchcomb Rural District Council. Deposit 10*s.* 6*d.* Messrs. Phillott & George, architects, Promenade, Cheltenham.

BISHOPSTOKE.—Jan. 19.—For erection of offices for 305 children on the site for Bishopstoke new Council school, for the Hampshire County Council. Deposit 10*s.* 6*d.* Mr. A. L. Roberts, architect to the Education Committee, The Castle, Winchester.

CHEADLE.—Jan. 14.—For building boundary walls and shed at the Council's depôt, Ravenoak Road, Cheadle Hulme, for the Cheadle and Gatley Urban District Council. Deposit 10*s.* 6*d.* Mr. F. R. Gibbins, B.Sc., A.M.I.C.E., Council Offices, Cheadle, Cheshire.

COLCHESTER.—Jan. 20.—For erection of tuberculosis pavilion, scarlet-fever ward, and alterations and additions to the administration block at the Infectious Diseases Hospital, Mile End, for the Borough and Port Health Committee. Mr. H. Collins, A.M.I.C.E., borough engineer and surveyor, Colchester.

COLEHAM.—Jan. 12.—For building new classrooms and making other additions and alterations to the Trinity Infants' School, Coleham, for the Shrewsbury Education Committee. Deposit £2 2*s.* Mr. W. Scott-Deakin, F.R.I.B.A., architect, 12A Pride Hill, Shrewsbury.

COMBE ROYAL.—Jan. 16.—For rebuilding a house at Combe Royal. Mr. R. B. Luscombe, The Lodge, Combe Royal, near Kingsbridge, or Mr. Geo. B. Perrott, architect, Kingsbridge, Devon.

COVENTRY.—Jan. 13.—For enlargement of the Frederick Bird Council School, Swan Lane, for the Education Committee. Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry. Send £1 1*s.* deposit to the Education Office, 44 Bayley Lane, Coventry.

DERBY.—Jan. 15.—For additions to the administrative block at the Borough Mental Hospital, Rowditch. Mr. J. Ward, M.I.C.E., borough surveyor, Babington Lane, Derby.

DEWSBURY.—Jan. 11.—For the various works required in erection of a shed at Queen's Mills, Savile Town (area roughly 9,000 super yards). Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects, Market Place, Dewsbury.

EASTBOURNE.—Jan. 15.—For additions to the Dispensary at the rear of the Town Hall, for the Corporation. Mr. W. C. Field, borough architect and building surveyor, Town Hall, Eastbourne.

FERRYHILL.—For erection of a house, shop, stable, &c., at Ferryhill Village, Durham, for Mr. J. H. Forster. Deposit £1 1*s.* Mr. H. Moore, architect and surveyor, 39 Newgate Street, Bishop Auckland, and Shildon.

FLEETWOOD.—Jan. 20.—For roofing over the extension of fish stage at the new fish dock, Fleetwood, for the Lancashire and Yorkshire Railway. The Engineer's Office, Hunt's Bank, Manchester.

IRELAND.—Jan. 11.—For building four single labourers' cottages and one double labourer's cottage, including fencing of plots, for the Tobercurry Rural District Council. Mr. W. V. Donohoe, clerk to the Rural District Council, Tobercurry.

IRELAND.—Jan. 13.—For erection of dwellings for the working classes on (*a*) the Beresford Street and Church Street area (subject to the final sanction of the Local Government Board), (*b*) the Trinity Ward areas (Luke Street, Moss Street, and Maguinness's Place), for the Housing Committee of the Dublin Corporation. Deposit £2. The City Architect, Municipal Buildings, Cork Hill, Dublin.

IRELAND.—Jan. 18.—For erection and furnishing of National School Buildings named St. Erc's, near Dingle, co. Kerry. Dingle Royal Irish Constabulary Barrack.

IRELAND.—Jan. 28.—For the erection and furnishing of National School buildings at Foilogohig (near Banteer), Co. Cork. The District Office of Works, Cork, and Mallow Post Office.

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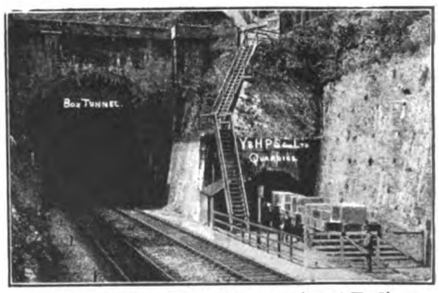


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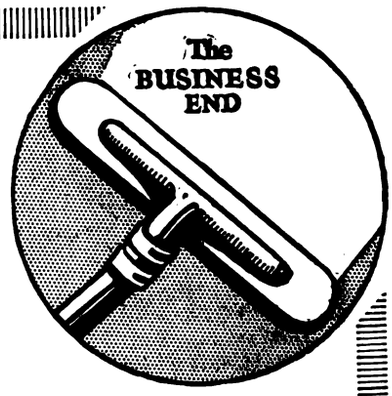
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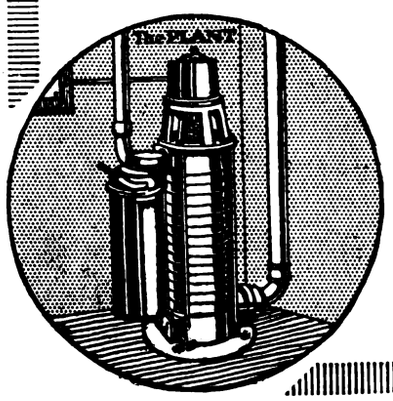
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KEIGHLEY.—Jan. 19.—For erection of new office in Parson Street depôt, and for public w.c.s in Devonshire Hotel Yard, for the Corporation. The Borough Engineer, Keighley.

LEEDS.—For any of the various works required in the erection of a pair of semi-detached cottages off Pontefract Lane. Mr. F. Mitchell, architect and surveyor, 9 Upper Fountaine Street. Albion Street, Leeds.

LEEDS.—Jan. 13.—For proposed works in connection with the subway adjoining the circus, &c., York Road, for the Corporation. Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

LONDON.—Jan. 19.—For erection of a sorting office at Herne Hill, S.E., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. Mr. E. Cropper, H.M. Office of Works, 22 Carlisle Place, Westminster, S.W.

LONDON.—Jan. 26.—For construction of an engine house, including the foundations for gas engines and pumps, the construction of culverts and connecting chambers, suction and delivery pipes, &c., and other works on the south side of the present engine house, at the Council's Isle of Dogs Pumping Station, situated on the east side of Stewart Street, in the borough of Poplar, for the London County Council. Deposit £5. The Council's Chief Engineer at the County Hall, Spring Gardens, S.W.

LUDLOW.—Jan. 26.—For erection of twenty-two cottages under the Housing, Town Planning, &c., Act, 1909, on land in Holdgate Fee, for the Town Council. Deposit £2 2s. Mr. J. Butters, architect, Ludlow.

MANCHESTER.—Jan. 20.—For the execution of general contractors' and plumbers' work that may be required in connection with the drainage of houses and other premises for a period of twelve months ending March 31, 1915. Deposit £1 1s. Mr. H. Prescott, manager of the Drainage Department, Manchester.

PONTNEWYNYDD.—Jan. 9.—For erection of a new fire station in Hanbury Road, Pontnewynydd, for the Abersychan Urban District Council. The Surveyor, Council Offices, Abersychan.

PONTYMISTER.—Jan. 18.—For erection of boys' and girls' school to accommodate 600 children at Pontymister, for the Monmouthshire Education Committee. Deposit £2 2s. Mr. J. Bain, F.R.I.B.A., County Council Offices, Newport.

PORTLAND.—Jan. 11.—For erection of playsheds at the Portland Underhill Council School, for the Dorset County Council. Mr. C. G. Bone, secretary, (Education Department, County Offices, Dorchester.

ROCHE.—Jan. 9.—For erection of new class-rooms, offices, improvements, &c., at the Roche Council School, for the Cornwall Education Committee. Mr. B. C. Andrew, architect to the Committee, Biddick's Court, St. Austell.

SEATON DELAVAL.—Jan. 28.—For erection of a police station, for the Northumberland Standing Joint Committee. Deposit £2. Mr. J. A. Bean, county surveyor, Moothall, Newcastle-on-Tyne.

SOUTHSEA.—Jan. 18.—For erection of a public elementary school in Meon Road, Southsea, for the Portsmouth Education Committee. Deposit £3 3s. Mr. A. E. Cogswell, architect, Prudential Buildings, Portsmouth.

SHEFFIELD.—Jan. 18.—For the widening of High Bridge, Penistone Road, partly in the city of Sheffield and partly in the rural district of Wortley, for the City Council. Deposit £1. The City Engineer, Town Hall, Sheffield.

SHORTLANDS (KENT).—Jan. 15.—For the construction of pumping-station buildings and other contingent works at Shortlands, for the Metropolitan Water Board. The Chief Engineer's Department, Savoy Court, Strand, W.C. Send £10 deposit to the Accountant to the Board, Savoy Court, Strand, W.C.

SUMMERSEAT (LANCS.).—Jan. 20.—For works required in alterations and additions at the Summerseat House municipal special school, Summerseat, near Bury, for the Manchester Education Committee, each section to be let separately as follows: (1) excavator, drainer, concretor, and bricklayer; (2) stonemason; (3) slater; (4) carpenter and joiner; (5) supply of cast-iron work; (6) plumber and glazier; (7) plasterer and painter. Deposit £1 1s. Education Offices, Deansgate, Manchester.

TORPOINT.—Jan. 13.—For the building of a house at Torpoint, for the Guardians of the St. Germans Union. Deposit £1 1s. Mr. F. E. Cleverton, clerk, 4 Buckland Terrace, Plymouth.

UPHOLLAND.—Jan. 30.—For erection of eight workmen's dwellings, for the Upholland Urban District Council. Deposit £1 1s. Mr. A. Hunt, surveyor, Council Offices, Upholland, Lancs.

WADSLEY.—Jan. 14.—For erection of workshops at the West Riding Asylum, Wadsley, near Sheffield. Send £1 deposit by separate letter to the Treasurer to the Board, West Riding Asylum, Wakefield. Mr. W. E. H. Burton, A.M.I.C.E., architect to the Board, West Riding Asylum, Wakefield.

WALNEY.—Jan. 18.—Tenders are invited, either in whole or separate trade contracts, for the erection of new premises on the promenade, for the Bank of Liverpool, Ltd. Mr. J. F. Curwen, F.R.I.B.A., architect and sanitary engineer, 24 Highgate, Kendal.

WARRINGTON.—Jan. 19.—For the supply and erection of six cast-iron ornamental tramway shelters at the various tramway termini, for the Electricity and Tramway Committee. The Borough Surveyor, Town Hall, Warrington.

WEST BROMWICH.—Jan. 15.—For erection of the "George Salter" Council School, Greet's Green, for the Education Committee. Deposit £1 1s. Mr. A. Long, architect, New Street, West Bromwich.

WISBECH.—Jan. 13.—For erection of sixty-four houses, in pairs, disposed as follows, for the Marshland Rural District Council—viz.: Clenchwarton, three pairs; Emneth, four pairs; Terrington St. Clement, four pairs; Upwell (Lakesend), four pairs; Upwell (Nordelph), five pairs; Upwell (Three Holes), four pairs; Walpole St. Andrew, three pairs; Walpole St. Peter, three pairs; West Walton, two pairs. Deposit £1 1s. Mr. E. A. Walker, architect, 44 Market Place, Wisbech.

WORKINGTON.—Jan. 12.—For erection and fitting up of a bathroom at Lawrence Street Schoolhouse, and for various small alterations to the premises in connection therewith, for the Education Committee. The Borough Surveyor's Office, Workington.

YNYSDDU.—Jan. 18.—For erection of mixed school to accommodate 350 children at Ynysddu, for the Monmouthshire Education Committee. Deposit £2 2s. Mr. J. Bain, F.R.I.B.A., County Council Offices, Newport, Mon.

TENDERS.

ALDERSHOT.

For the erection of fifteen army recreation huts (minimum size 108 ft. by 30 ft.) within the Aldershot Command. Mr. J. WILLIAMS DUNFORD, architect, 100c Queen Victoria Street, London, E.C.

Coxhead	£8.850	0	0
Brand, Pettit & Co.	8,625	0	0
Jennings & Co.	7.800	0	0
Cooper	6.750	0	0
Pattinson & Son	6.300	0	0
Lavington & Son	6.000	0	0
McManus	5,490	0	0
Crosby & Co.	5,398	0	0
Chapman, Lowry & Puttick, Grayshott, Surrey*	5,212	0	0

* Accepted subject to modification.

BROADSTAIRS.

For the construction of a public convenience, for the Urban District Council. The Borough Surveyor.

Dagley Bros.	£318	0	0
Dunn	247	0	0
May	245	0	0
Anderson Bros.	230	0	0
J. E. WHITE, Ramsgate (*accepted*)	223	0	0
Surveyor's estimate	245	15	9

For the erection of a shelter, for the Urban District Council.

J. T. MAY, Broadstairs (*accepted*)	£68	0	0
Surveyor's estimate	75	0	0

For building boundary walls, for the Urban District Council.

J. E. WHITE (*accepted*)	£44	0	0

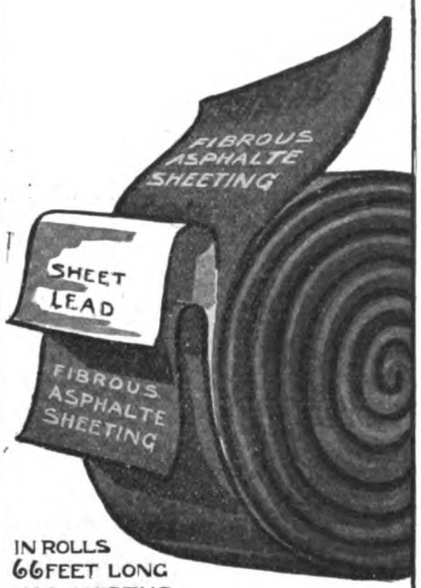
DEVONPORT.

For the erection of a Council school at King Street, for the Devonport Education Committee.

Wakeham Bros.	£11.204	0	0
Lapthorne & Co.	10.667	0	0
Endicott	9.935	0	0
Ambrose Andrews	9.888	0	0
Pearn Bros.	9.845	0	0
Turpin	9,647	0	0
Crockerell & Co.	9,536	0	0
Stanbury & Co.	9.184	6	0
A. N. Coles, Ltd.	8,675	0	0
J. PAYNTER, Pentillie Road, Plymouth (*accepted*)	8,634	12	0

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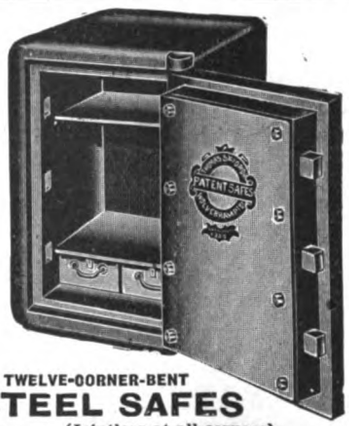
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HIGHTOWN.

For erection of semi-detached houses, Lumley Street, Hightown, Castleford. Mr. F. SCATCHARD, architect and surveyor, Midland Bank Chambers, Castleford.

Accepted tenders.

R. Walker & Sons, Castleford, brick and mason	£410	0	0
Mr. J. Terry, carpenter and joiner	320	0	0
Bateson & Sons, plumbers	169	0	0
Beighton & Robshaw, plasterers	64	0	0
T. Dalton & Son, slaters	41	7	0
Mr. J. Adams, painter	21	3	0
Total	£1,025	10	0

IRELAND.

For the erection of thirty-six artisans' dwellings at Sallynoggin, for the Kingstown Urban Council. Messrs. CALDBECK & DUNLOP, architects, Dublin.

Messrs. WALTER JENNINGS, Kenmare, co. Kerry (*accepted*) £6,850 0 0

Seven tenders were received.

ST. THOMAS.

For carrying out the Topsham water supply scheme, for the St. Thomas Rural District Council.

J. K. HARRIS, Clyst Hydon (*accepted*) £5,688 18 11

SHARDLOW.

For erection of the new infirmary, master's house, &c., for the Guardians.

J. BULL, Long Eaton (*accepted*) £9,134 0 0

STOKENCHURCH.

For erection of six houses in pairs at Horsler's Green, Stokenchurch, for the Wycombe Rural District Council. Mr. A. L. GRANT, building surveyor, 15 High Street, High Wycombe.

Smallbone & Sons	£1,910	0	0
Lovell & Son	1,545	0	0
Hunt & Sons	1,477	0	0
Harris & Co.	1,170	0	0
Mr. F. NASH, High Wycombe (*accepted*)	1,135	10	0

TILLINGTON.

For the erection of children's homes in Stone Road, Tillington, near Stafford, for the Guardians. Mr. R. A. GLASS, architect, Stafford.

Dyke & Son	£3,986	0	0
Sandy & Co.	3,329	0	0
Mason & Son	3,143	0	0
Sharp & Sons	3,084	0	0
Jervis Bros.	3,056	0	0
Cooke	2,937	0	0
Espley & Sons	2,935	0	0
Gough & Sons	2,900	0	0
Morgan & Son	2,640	0	0
H. J. CLAY, Stafford (*accepted*)	2,508	0	0

EXTENSIVE alterations to the Express Dairy Company's chief depôt at Drayton Park have just been completed by Messrs. E. A. Roome & Co., Crown Works, Urswick Road, Hackney, under the supervision of Messrs. Young & Hall.

MR. JOSEPH HILL, of Selborne, Leigham Court Road, Streatham, governing director of Messrs. Higgs & Hill, Ltd., builders, who died on November 17 last, aged seventy-five, left estate of the gross value of £49,617, of which £28,815 is net personalty.

THE Hull Finance Committee have received the sanction of the Local Government Board to a loan of £5,049 for the construction of a boating lake near the Pickering Park, Hessle Road; £2,378 for boats, boat-houses, and machinery; £2,300 for the purchase of land for the Hull Grammar School; and £12,245 for the extension of the Hull City Asylum.

A LOCAL Government Board inquiry was held last month into an application by the York Corporation for sanction to borrow £6,200 for the purchase of land on which to erect working-class dwellings. The Town Clerk said the land in question was peculiarly adapted for the purpose, being near the centre of the city. It was forty-eight acres in extent, and the terms were specially favourable. The Board of Guardians had applied for a portion on which to erect a children's home. It is proposed to erect 220 houses of various types.

GERMAN TRADE, 1913.

AN important report on the trade of Germany for the year 1913 by Sir Francis Oppenheimer, his Majesty's Commercial Attaché in Germany, has been published this week. From it we take the following extracts:—

General report. Quiet change of the industrial tide in 1913.—In Germany the year 1913 marked the end of another industrial wave. A quiet change of the tide has taken the place of cyclonic disturbances which characterised earlier changes. In 1913 there were no incidents resembling the catastrophes of former experiences. This tendency is the natural result of recent developments.

Growing knowledge of market conditions.—Germans, in every stage of society, are prone to combination; in Germany there is hardly a branch of manufacture or of trade, however special, which has not its own organisation and probably its own journal. Manufacturers all over the Empire, producing the same goods, are brought into touch either personally or in print. The conditions of the whole Home market are thus disclosed; its chances are weighed and scrutinised. The more a works specialises (and the tendency, owing, no doubt, to the very keen Home competition, is all towards specialisation) the more must it co-operate with, and the more has it to rely upon, other branches of manufacture; their trade conditions have to be watched in turn. The specialist is brought into contact with the outside world. News from abroad is published and carried into distant workshops. The profusion of trade and professional papers can be gauged from their catalogue numbering 300 closely printed pages. That no branch is forgotten may be gathered from the fact that there figures among them a fortnightly magazine dealing with the interests of the foremen of platelaying gangs on the Prussian State railways (founded in 1906). The keen competition among trade papers has produced a high standard. Much ingenuity and care is spent upon the reports of the industrial weather, with the result that no man need be taken unawares by a change of the tide.

This education has been assisted by a widespread tendency to speculate in industrial shares. Quotations are watched and markets are studied. Even those in a small way of business have acquired a certain aptitude in reading the industrial barometer.

Money market.—In 1913 the reading of the times was comparatively easy. In connection with the Prussian issue to the general public of 350,000,000 marks of 4 per cent. Treasury bonds at the end of January 1914, there was revealed an apparently unprecedented abundance of money. The ease of the money market, though then not quite in keeping with the seventy-fold applications for that issue, was nothing short of sensational. If it showed that the precautionary measures had been effective, it proved also for the first time how colossal the totals must have been which had been hoarded during the European troubles in 1912. Of course, the change of the industrial tide had in the meantime freed enormous amounts; not only had manufacture been reduced, but the prices of some of the most important raw materials had sunk conspicuously.

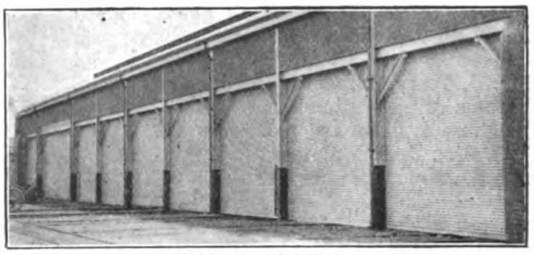
The favourable condition of the money market early in 1914 has been fully confirmed by subsequent events. The management of the Imperial Bank, which had often during recent years been taunted as over-prudent, is to-day unreservedly applauded. Amid international financial perplexities the German money market stands solid and serene. Germany's political retreat over the Morocco question has ended in a great financial victory.

Syndicates.—Once the change had come, syndicates exercised their usual steadying influence. This side of syndication has repeatedly been explained. Syndicates control production and sales, and, when the Home market is satiated, help towards directing merchandise abroad. In an atmosphere of industrial depression syndicates are seen to their greatest advantage—at least by their members. It is, then, not surprising that in 1913, and to a greater extent in the early months of 1914, syndication—the renewal of old syndicates and the foundation of new ones—should have been one of the most frequent subjects discussed in the commercial Press.

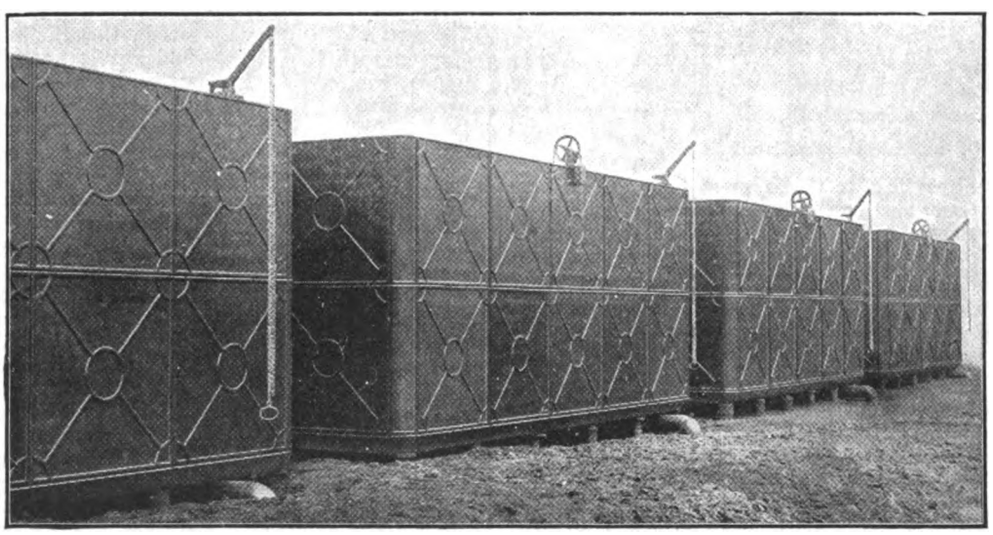
There is no doubt that after each successive boom the desire for syndication is strengthened, and at the same time its accomplishment is rendered more difficult. The

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desire is strengthened because every boom gives the members of the various industries a chance of extending their works and raising their capacity of output—which means an increased production and in consequence an increased competition during a slump. In the first quarter of 1914 prices of unsyndicated goods reached what seemed to be the lowest possible limit. Mixed coal and ironworks were known to sell their finished iron produce below cost price, because the sale of coal was leaving them a profit. Even among syndicated industries there were sales below syndicate prices—a practice which does not appear to be unknown also during more prosperous days. Yet the cry for syndication became louder as the depression progressed. Though the works of the finishing industries were being kept going at a loss, not one among them seemed inclined to curtail manufacture, as such a decision was likely chiefly to benefit competitors. A number of finishing industries declared with quite a novel enthusiasm that syndication was their only salvation, and began, perhaps for the first time, serious efforts to accomplish it. Yet the negotiations have been greatly delayed by the conflict of the many interests involved. The formation of one syndicate is made dependent upon the formation of some other syndicate, so that none of the necessary preparations are allowed to proceed beyond a certain point.

The difficulties of syndication are augmented, because every boom gives a further advantage to the giant works which have virtually concentrated the various stages of manufacture under one roof. They have little interest in the various syndicates controlling the respective stages of manufacture unless they are granted preponderant figures of participation, more especially in the final stages. The formation, early in 1914, of the Tube Syndicate was, at the eleventh hour, frustrated by one of the giant concerns demanding such an excessive figure of participation. As the smaller works, whether syndicated or not, are greatly at the mercy of these giants, they naturally prefer a state of syndication which guarantees their existence, checks competition, secures steady prices in the Home market, and provides export bounties for foreign orders. For the giant concerns, syndication means financial sacrifices; but these sacrifices are expected of them as they are the princes of industry, the pillars of Germany's economic life. Their concerns have become world concerns. They embrace so many branches of manufacture, they command so many markets, that they reach above local industrial tides. When the tide in Germany changed, the Gelsenkirchen Works, to mention but one characteristic instance, secured a contract for iron tubes in South America of 65,000 tons, representing a value of 9,000,000 marks.

Concentration.—The rise of such works, although it has been greatly assisted by the modern developments of German banking, is chiefly due to the application of science to manufacture. These leaders have increased their profits by carrying the science of by-products to its utmost limits, and they have thus very materially reduced their cost of production. They are both indefatigable and generous where scientific research is concerned. The Emperor William Institute for the Scientific Exploration of Coal is the latest proof. A German society for the study of ores is similarly in course of formation. A succession of booms has made these mammoth concerns financially independent—in Rhenish Westphalia some of them have ended by financially assisting the banks to which they had originally owed their own phenomenal rise. Their financial resources enable them to add new branches of manufacture to those they already control. They are continuing their steady process of concentration, each step of which leaves them further fortified. The recent boom has produced new and noteworthy concentrations—e.g., the Mannesman Tube Works have absorbed the important sheet-iron works of Schulz-Knaudt. The speech in which the chairman of the Mannesman Works recommended the amalgamation to the shareholders is so characteristic of the general trend that some of his arguments deserve to be repeated. The chairman assured the shareholders that the Mannesman Works were not pushing towards aggrandisement, but were driven to it. The advantage which the works had acquired in the tube market must disappear if the necessary raw iron had still to be bought at high syndicate prices from the very works of a mixed character which were more and more becoming competitors in the tube market. Efforts had been made to secure special terms for the delivery of raw iron in accordance with the importance of the orders which the works had to give—but there was little inclination to negotiate. However, even so, a cheap supply of raw iron was not all that was required to secure the advantages of a mixed works. They must eventually control a complete line of production—coal, blast furnaces, steel works and tubes—to exploit every possibility of cheap supplies. The development of the Mannesman Works is moving from finished article to raw material—in direct opposition to the development which has taken place in most of the other great works.

The financial power to which the large works have attained is also increasingly used for acquiring their own means of transport, because all the world over the item of transport is gaining an additional importance in the faculty of competition. During the year under report a number of works in the heavy industries have combined with shipping concerns. The example had been set by the Gelsenkirchen Works and the Deutsche Kaiser Mining Works, which own Rhine fleets of their own. In 1913 similar steps were taken by the Gutehoffnungshütte, Koenig Ludwig mines, Concordia, Constantin der Grosse, &c. It would appear that 1914 may see even a greater number of similar mining-shipping combinations. To prevent a final syndication of Rhine shipping (for which these combinations were believed to be only the introduction) various German Governments have deemed it necessary to secure a preponderant and timely interest in large Rhenish shipping concerns.

The most recent development in the matter of concentration is perhaps the most interesting of all. To guarantee a steady sale of their vast output some of these big works have begun to effect a financial combination with their own consumers, thus following on an extensive scale an example set by the electrical industry. An important works manufacturing machines for use on railways has bought up a company letting out railway machinery (the shares of which it bought for £100,000); the firm of Krupp has bought up two shipbuilding yards; a leading factory producing electrical appliances and machinery has obtained control of an electrical power supply company (capital, £400,000), &c.

These gigantic concerns (of which every industry boasts increasing numbers) exercise a steadying influence upon the country's economic life because their interests are world interests. Whatever the industrial tide may be at Home they are vast employers of labour; in many communities they are the backbone of local finance; together they contribute colossal revenues to the public funds. Recently two giant combinations in the banking world brought the Exchequer (by way of taxation) a windfall of over £1,000,000. It is not unnatural, then, that such concerns obtain facilities from the Government which would be denied to the smaller fry. These privileges in turn strengthen their position and give them an additional lead.

Difficulties of Building Trade.—Industrial demands upon the money market are, of course, greatly responsible for the quick rise and the high level of the German bank rate. To that extent they are answerable for the calamities of the building trade. Speculative builders cannot obtain the necessary mortgages or advances at rates which would still yield a profit. For years speculative building has been at a standstill, and thereby employment in all dependent industries has been seriously affected.

It is then not surprising that in a number of towns the scarcity of dwellings should have become a public calamity. As might have been expected, the dearth of workmen's dwellings (one to three rooms, including the kitchen) is greatest. The census of habitations undertaken at the end of 1912 showed, *e.g.*, that the empties of all such smaller dwellings in the following towns amounted to:

	Per Cent.
Freiburg	0.3
Bremen	0.5
Dresden	0.6
Strassburg, Bielefeld	0.7

As a natural result these small dwellings show comparatively the highest increases in rent. On April 1, 1913, which is a popular quarter day in Germany, workmen's families in various parts of the Empire had to be housed in public buildings, schools, and barracks, because no dwellings were available.

The statistics of the German mortgage banks are instructive in this connection. In the year 1911, as in the preceding years, they had issued bonds amounting to an annual total of 515,000,000 marks; in the year 1912 the sum was reduced to 207,000,000 marks; in 1913 to 41,000,000 marks. Correspondingly they had increased the amount of their mortgages in 1911 by 572,000,000 marks; in 1912 by 219,000,000 marks, but in 1913 by only about 5,000,000 marks. Several municipalities found themselves compelled to open mortgage funds—from which to grant at least the most urgent, and chiefly second, mortgages.

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In the building trade there were in 1912-13 for every 100 places the following number of applicants:—

	1912.	1913.
January	459	531
February	358	383
March	161	262
April	144	198
May	143	212
June	130	185
July	139	198
August	148	219
September	129	164
October	163	228
November	233	437
December	297	543

Whatever building there was concerned chiefly factories and public buildings (municipal buildings, railway stations, &c.). The failure of the building trade, of course, affects almost exclusively male adult labour.

CALENDARS. DIARIES. ETC.

FOR many years past we have looked forward to the receipt of the now widely used blotting-pads issued by Messrs. Hudson & Kearns, of Hatfield Street Works, Stamford Street, S.E. The publishers wish to call special attention to the No. 8A pad, which, we are informed, is recognised by most of the leading commercial houses as the "Business Man's Blotting-pad." There are numerous other sizes, and Messrs. Hudson & Kearns have quite rightly obtained an unrivalled name for these useful, or rather indispensable, appointments for the office desk.

MESSRS. WATERLOW BROS. AND LAYTON, LTD., have, as usual, brought out their valuable "Architects' and Surveyors' Diary and Price Book," and sell it for 3*s.* 6*d.* and 6*s.* according to diary space and binding. The 1915 edition keeps abreast of the times, and includes such new matter as the Building Regulations for Public Elementary Schools and a table of discounts, as well as changes of *personnel* in the official world. The section setting forth such prices as may be particularly useful to architects, builders, &c., occupies some twenty closely printed pages out of the 420 which make up the reading matter as apart from the Diary. It will be seen, therefore, that the book constitutes a miniature professional business encyclopedia, and is indispensable independently of the purchaser's tenacity as to daily diary entries.

FROM the London and Lancashire Fire Insurance Co., Ltd., we have received an unostentatious wall calendar and a small memorandum block giving a page to each day of the year. The latter, too, is meant to hang, for if used as a desk pad the pages are apt to loose their trimness.

MESSRS. HAYWARD BROTHERS & ECKSTEIN, LTD., combine a comprehensive catalogue of their building specialities with a diary. The latter is by no means formidable, for the six working days go to a single page.

THE Calendar of Messrs. Merryweather & Sons, Ltd., might almost be called sensational, for it depicts a great castle in flames, while a motor fire engine, motor tender, motor escape, and a fire boat are busy at the foot of the blazing pile. We notice, by the way, that both the escape and the engine are labelled "Leicester Fire Brigade"; but we do not recognise the castle.

MESSRS. ROBERT BOYLE & SON, 64 Holborn Viaduct, E.C., again issue their neat 3-inch scale calendar. And with it come illustrations of Boyle's latest patent "Air-pump" ventilator, design No. 175B, and Boyle's latest improved air-inlet bracket, design No. 245B, which, though but slightly less ornamental than their catalogued designs Nos. 175 and 245, are equally as effective and well made, and substantially lower in price. It is worthy of note that the "Boyle" system of ventilation has been successfully applied to more than 300,000 buildings.

MR. WM. HENRY FORDE, of 56 Grosvenor Road, Claughton, builder and contractor, left £61,817.

GEORGE FOX, of Dagenham, East Ham, of Messrs. Fox & Sons, builders and contractors, has left estate valued at £30,210, of which net personalty is sworn at £1,238.

AT the monthly meeting of the Barrow Town Council, it was reported that the Carnegie Trustees had agreed to increase their gift of £12,000 to £13,000 for a new Free Library for Barrow. Contracts were let for new gasworks at Barrow to the extent of £35,000. Other contracts are under consideration.

VARIETIES.

KIRKCALDY District Committee have decided to accept the offer of Messrs. Macfarlane, Strang & Co., Ltd., Lochburn Ironworks, Maryhill, Glasgow, for one of the Glenfarg water works contracts. Their offer was £20,750 7*s.* 3*d.*

MR. JOHN BROWN CORRIE, of Sheffield, of the firm of Messrs. J. B. Corrie & Sons, plumbers and sanitary engineers, a former president of the Sheffield Master Plumbers' Association, who died recently, left estate of the gross value of £33,907, of which £31,057 is net personalty.

LARGE extensions are being carried out on the "Kahn" system of reinforced concrete at Messrs. Vickers' Factory, Crayford, Kent, the cost of which will amount to about £18,000. The general contractors are Messrs. William F. Blay, Ltd., Railway House, Dowgate Hill, E.C.; and at Dartford.

THE Wednesbury Town Council on Monday last agreed that application be made to the Local Government Board for sanction to borrow £5,240 for the provision of twenty-four dwellings under the Housing of the Working Classes Act; that a purchase be made of 9,920 square yards of land in Hobs Hole Road for £600; and that a contract be entered into with a local firm of builders for the erection of twenty-four houses thereon for £4,320, in accordance with plans already approved.

THE Board of Education recently approved an additional expenditure of £1,000 on the erection of the Dover County School for Boys, and the contract has been signed by Messrs. H. G. Denne & Son, of Deal. The amount of the contract, after providing for extra payment in consequence of the war and for the reinstatement of omissions, is £13,584 8*s.* 6*d.*, being just within the sum of £13,585 approved by the County Council. The Committee have agreed that the contractors shall not be held liable for any damage that may be done to the building during the period of the contract through hostile acts by the enemy during the present war.

THE Coventry Photographic Club, which has undertaken, at the request of the Public Library Committee, a survey of ancient and other buildings, and a reproduction of old prints relating to the city and district, opened another exhibition of photographs on the 4th inst. in the clubrooms, Little Park Street. The present exhibits constitute the fresh work done since a display was made nearly two years ago, and the total is now 212. Certificates to the following: S. Loveridge, for "Apple Store-room, Charterhouse"; P. H. Wenham, "St. Mary's Hall State Chair." "Mantelpiece in Oak Room," and "Corley Church Interior"; H. W. Bush, "St. Mary's Hall Handrail Terminal" and "Bablake Old School Kitchen Fireplace"; A. H. Tompkins, "Bond's Hospital Armchair"; G. O. Seymour, "Cook Street Gate"; P. L. Lainbow, "Tantara Stile, Stoneleigh"; A. L. Hitchen, "Godiva Procession, 1897."

A LOCAL Government Board inquiry was held last week into the application of the Truro City Council for sanction to borrow £24,300 for sewerage and sewage disposal. There was no opposition. Twelve years ago a similar inquiry took place, but the Council have not yet received the Board's report. The crude sewage has therefore continued to be discharged into the local tidal streams. According to the new scheme, as explained by Mr. F. A. Barnes, the City surveyor, it will be treated in tanks under an ordinary settlement system.

THE Birkenhead Water Committee have accepted, subject to the consent of the Council, the amended tender of Messrs. Robert McAlpine & Sons, amounting to £80,255, for the construction and laying of the portion of aqueduct in connection with the proposed Alwen water supply to Birkenhead from a point near Llanfihangel-Glyn-Myfyr to the site of the works at Cerrig-y-Druidion, including the purchase of the necessary pipes. The accepted tender of the Staveley Coal and Iron Company, Ltd., near Chesterfield, for cast-iron pipes amounts to £97,858; Messrs. Stewarts & Lloyd's tender for steel pipes amounts to £15,123; and Messrs. Blakeborough & Sons, of Brighouse, for the supply of valves, have tendered £4,574. The committee have also accepted the tender of Messrs. Firth & Co., of Derby, amounting to £53,106, for the construction of the portion of the aqueduct between Llanfihangel-Glyn-Myfyr and the Bwlch tunnel; and also the tender of Mr. J. Riley, of Cheltenham, for £42,440, for the construction of the aqueduct between the Bwlch tunnel and Connah's Quay, including the Mount Pleasant tanks.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, January 18.

Royal Institute of British Architects : Paper entitled "Ecclesiastical Buildings of Northern Italy," by Mr. F. C. Eden, at 8 P.M.

Royal Academy : Lectures on Painting (3) "Stepping Stones," by Mr. W. L. Wyllie, R.A., at 4 P.M.

Wednesday, January 20.

Carpenters' Hall : Paper entitled "Building in Mediæval Times by the Guilds," by Mr. C. Delisle Burns, M.A., at 7.45 P.M.

Royal Academy : Lectures on Painting (4) "Stepping Stones," by Mr. W. L. Wyllie, R.A., at 4 P.M.

Thursday, January 21.

Concrete Institute : Paper entitled "Some Modern Methods of Arch Calculation," by Mr. E. S. Andrews, B.Sc., at 7.30 P.M.

Monday, January 25.

Architectural Association : Paper entitled "Some Architectural Thoughts at the Present Time," by Mr. L. March Phillipps, at 8 P.M.

LESSONS FROM THE ENEMY.

THINGS after this war are not going to be the same as before; in fact, we may even say that at the present moment things are not the same as they have been. It rests wth us, and with all of us, to determine whether they are to be better or worse. "Business as usual" is an untenable proposition. It is not, and never will be again, "as usual." We cannot revert to the *status quo ante*. In order that we may ensure that the future may be better than the past, it behoves us to exercise forethought, and determine what our course must be to bring about improvement. In this course we may do well to learn lessons from the enemy.

The most outstanding feature of our enemy's activities has been, without question, Germany's preparedness for a sudden and vigorous employment of all her resources for an energetic initiative in the confidence of a speedy victory. Those resources may not—and we trust will not—be sufficient for the attainment of her purpose, but that preparedness has, we must admit, given her the balance of advantage up to the present. She is in possession of Belgium and of no inconsiderable portion of the lands of our Allies, France and Russia. To deprive the enemy of that possession will, under modern conditions of warfare, be a difficult and costly operation, and we are not yet ready to undertake it because we are only now beginning to make our preparations.

For the state of things after the war it is not too soon, and we should start at once to make our preparations. When peace arrives Belgium will have very largely to be rebuilt. What preparation should our architects, our builders, our manufacturers, our merchants make that they may be ready to take a part in the rebuilding of Belgium? It will be essential that the work of rehabilitation shall be speedy, and to as great an extent as possible inexpensive. It will be too late to begin preparations for this end when the opportunity is knocking insistently at the door.

Architects must make their preparations now. Obviously the first step for those of them who hope or intend to take a part in the work is to acquire a knowledge of technical French and Flemish. For this purpose advantage might well be taken of the presence in this country of Belgian refugees, thus fulfilling a double purpose in helping those who learn and those who teach. Next must come an acquaintance with the conditions of living, the requirements of those who are to be housed and the materials that are available. Then designs can be made and drawings prepared which will be intelligible to those who are to carry them out. It will probably be necessary for the architects to contemplate the possibility of having to act as their own clerks of works, to personally superintend the carrying out of their designs. It has already been suggested that the complete destruction of many villages and towns in Belgium will provide opportunity for the introduction of garden-city principles in their reconstruction or replacement. If such introduction is to materialise, the schemes must be prepared in advance. There will be no time for them after peace is declared. The people of Belgium will want new homes at once.

Our builders may also make their preparations for the future. It is scarcely likely that the Belgians will after the war possess the resources or the organisation for speedily carrying out the necessary work of rebuilding their devastated homes, and the assistance of British contractors will probably be warmly welcomed. But in order that it may be prompt and effectual preparedness is essential.

So, too, must our manufacturers of building material exercise forethought, and be prepared for immediate supply. They must not suppose that their present stocks will suffice either in quantity or in kind. They must follow the example which is being set by manufacturers in other goods who have taken up the work of supplanting German and Austrian productions in neutral and Colonial markets, and be prepared to supply their prospective customers with the articles that these latter desire, and not to endeavour to force upon new markets their past fashions

Our merchants must make their arrangements to act as intermediaries between the manufacturers and the ultimate customers. They must lay themselves out to quote prices c.i.f. promptly and accurately, and not to be content with quotations f.o.r. or f.o.b. It goes without saying that these quotations must be in metric quantities and Belgian coinage, and in terms easily adaptable to the rate of exchange which may be current when peace is declared. Above all, the manufacturers and merchants must advertise their preparedness and acquaint architects and builders with their readiness to supply material that may be needed, and must take full advantage of the professional Press for that advertisement.

In this matter of advertisement our manufacturers and merchants have much to learn from those of Germany. During the last few years our building trade has been flooded with German manufactures and German inventions, and their representatives have been amongst the most extensive occupants of the advertisement columns in our own Journal and in our contemporaries. The strong grip of the building trade and the architectural profession which German-invented specialties have attained has not

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GARDEN ORNAMENTS.—CIRCULAR FOUNTAIN AT PETWOOD, WOODHALL SPA.

in many cases been due to the excellence of those inventions or the superiority of German proprietors, but to the true business instinct of German proprietors in giving to their wares bold advertisement. We need hardly say that the German origin and the German proprietorship of these wares have in many instances been cleverly concealed.

This exploitation of advertisement is but one outcome of another German trait, for, in addition to preparedness, we have as one of our enemy's characteristics that of thoroughness. The thoroughness of his cruelty, his "frightfulness," his "ruthlessness," is paralleled by that of his business methods, and here again we may learn from the enemy. The British working man often regards his employment as primarily a means to an end—so many hours' work each week to be rewarded by so many shillings in his pocket at the week-end, to be spent on not only satisfying his necessities, but on increasing his pleasures. The German treats his employment also as his hobby, takes his pleasure in his work rather than in his play. This makes for efficiency. A problem which lies before our manufacturers and our employers in the building trade is how to increase the interest and the pleasure of their workmen in their work. To some extent the war is infusing this spirit. The men who are preparing war material must feel that the man who handles the bolt and the rivet is helping in the fight as truly as he who handles the bayonet and the rifle.

We want more of this spirit, which must develop in ourselves a characteristic that marks in every phase of life the operations of our enemy—the principle of mutual help. Our whole industrial life should be permeated by the patriotic feeling that the exercise of our best efforts in our own particular sphere is a gain for our country, and reflectively of ourselves as a part of that country. We should feel that we cannot benefit the community without also benefiting the individual. When we undertake the rehabitation of Belgium we shall benefit, not only the Belgian, but the Briton.

Mutual help and united national effort have been strongly marked in the peace activities of our enemy as well as in war-time. The Government has assisted in every possible way the inventor, the manufacturer, and the trader. More particularly the credit of the nation has been the credit of the individual. Any inventor, any trader with good character and a fairly sound business proposition, has received the financial support and the capital he needed from the Government and the great banks. How different it has been with us! More and more it has become the general experience that with the growth in size and importance of our great joint-stock banks it has become increasingly difficult for the manufacturer and the trader to obtain financial support, except by the deposit of gilt-edged securities. Nay, more; it is fairly obvious that our banks have used the monies of their depositors, not to assist their customers, but to finance the enemy's banks and enable them to finance our commercial rivals.

This is a state of affairs that must be remedied, and we look to the Board of Trade, as the Government department most immediately concerned, to see that our banks are brought to heel. It is the credit of the nation that enables the banks to carry on their business, and the Government must see to it that the national support given to the banks must by them be extended to their customers.

We are all aware of what the Government is doing for the dye-manufacturing industry. We all know that the Board of Trade is making an endeavour, not perhaps in quite the wisest way—more from want of knowledge than from lack of good intention—to assist in the capture of enemy trade, and we may hope that financial support will be given by the Government or by the influence of the Government to the building trade, which, with its multifarious ramifications, is still the greatest industry in the country.

One more lesson we may learn from the enemy. His Government has given their manufacturers and traders a great advantage over the Britisher by cheap freight, partly by the development of State-owned railways, but vastly more by the establishment of an admirable system of water-borne canal traffic. This particularly affects the building trade, the traffic for which is largely bulky and indifferent to speed of delivery, therefore particularly suited to water carriage. The Government have for the defence of the realm taken control of our rail-

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GARDEN ORNAMENTS.—THE WARWICK VASE AT WARWICK CASTLE.

ways without any murmur on the part of the public or the shareholders. Without fuss or noise, our railway system is now nationalised. Why should it not continue to be nationalised in the interests of trade?

NOTES AND COMMENTS.

We have been much interested in a pamphlet on the Reorganisation and Extension of British Trade by Mr. Percy A. Reuss, which deals with the proposed formation of a public company for the exploitation—we might, perhaps, better say advancement—of British manufactures in foreign trade. This proposal emanates from a preliminary "Committee for the Expansion of British Trade" formed in Sheffield; but we hope the idea will be expanded into a national concern—not necessarily governmental—as it seems to us to contain many of the germs of the commercial organisation that has been so potent a factor in German mercantile expansion. We have not space at present to deal fully with the subject, but shall return to it on a future occasion.

The collection of cartoons, drawings and paintings made by Alfred Stevens for the projected decoration of Dorchester House, and now on view at the Tate Gallery, gives us the fortunate recovery of long-lost treasures, and affords still further evidence of the greatness of the master, of his power in composition, his sense of rhythm, his prodigality of invention. For all who value in any degree the intimacy of architecture, sculpture, and painting, their study is an imperative duty.

The declaration which has gone the round of the daily Press made by Canon Alexander, treasurer of St. Paul's Cathedral, that "fire experts say that St. Paul's can now be regarded as being as safe as it can be made," depends for its value on the reliability of the "fire experts," whose names are not quoted. There is a certain amount of reservation, for example, as regards the prevention of fire. It is stated that "all the woodwork which it has been possible to remove has been removed." The possibility clearly does not extend to the organ, the choir stalls, and other fittings, so there is still considerable risk of a fire starting. The worthy Canon's satisfaction is evidently to a considerable extent based upon the manner in which an attack from without—which was a very serious probability, as we have before pointed out—has been provided against, but we hope that internal dangers have likewise been recognised and adequate provision made for combating them.

We have already noted the inception of a movement in Dublin for the manufacture of glass in Ireland. We are pleased now to learn from the *Irish Times* that all preparations are complete for inaugurating in Dublin a factory for the purpose. The details of the project have been carefully worked out, and a scheme has been compiled by Messrs. Gustave Peeters and Leon de Ridder, Belgian refugees at present in Dublin, who have a life-long experience in the industry in Antwerp and other parts in Belgium. These gentlemen have been carrying out, for the past few weeks, tests and experiments with regard to Irish sands and limestone in the laboratories of the Royal College of Science, which have been kindly placed at their disposal—and every assistance given to them—by the Department of Agriculture and Technical Instruction. The results of these tests have proved eminently satisfactory.

M. Peeters lays stress on all the advantages which Ireland presents for such a scheme. "The Irish sands," he states, "are clearly superior to the Belgian ones, and as a general rule all the materials are absolutely satisfactory for producing sheet and plate glass of the very first quality, and this at a lower cost price than in Belgium, France, or Germany." He also points out that we have now more facilities to procure Belgian skilled labour to teach our workers than we will ever have. As regards himself, M. Peeters modestly states that he had been a simple working man in the factory where his father was an administrator, called Les Glaces de Roux, in Charleroi-Roux. Before the war they had two mirror factories in Belgium, one managed by his brother at Ghent, and the other by himself in Antwerp. His opinion, therefore, on the project is extremely valuable.

The opinion of M. de Ridder, who is an analyst, is also worth quoting. He says: "The Irish sands on

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GARDEN ORNAMENTS.—IN THE GARDENS AT PETWOOD, WOODHALL SPA.

which I have made experiments, in conjunction with M. Peeters, are suitable for the manufacture of the very best kind of sheet and plate glass. I consider even that these sands will allow us to make glass of a better quality than the Belgian glass at a smaller cost. I can state the same as regards the Irish limestone we used for this purpose." M. de Ridder has been technical supervisor of the factory of M. Peeters, and he has had similar experience in a chemical and medical glass manufactory in Chicago.

Doncaster is to be added to the list of towns wherein the local traders, particularly those dealing with electrical fittings, are up in arms against the competition threatened by the Corporation, who, it appears, are seeking powers to supply, not only electric current, but also fittings.

The war has brought so much increased industrial activity to Birmingham that the Council are in a difficulty. They are building a new electrical power-house, which will be available for a supply of current by the winter of 1916-17, and had intended to install temporary plant for 5,000 kilowatts, but now find a demand for 11,000 kilowatts. In spite of some opposition on the ground that this increased demand would be only temporary and cease with the end of the war, the Council has wisely, we consider, decided to make their temporary installation for 10,000 killowatts. The war profits of Birmingham manufacturers will enable them easily to make a contribution to the city funds to cover the predicted loss of £10,000.

Manchester is to have next spring an exhibition of Franco-British war pictures, which will include the work of some of the leading painters of Great Britain and France. Its formation has been entrusted to Mr. A. G. Temple, the Art Director of the Corporation of London, who, in view of the nature of the exhibition and the important part that Manchester is playing in the present war, has placed his services gratuitously at the command of the Manchester Corporation. The Ministry of Fine Arts in Paris has also intimated its readiness to assist in any way in its power.

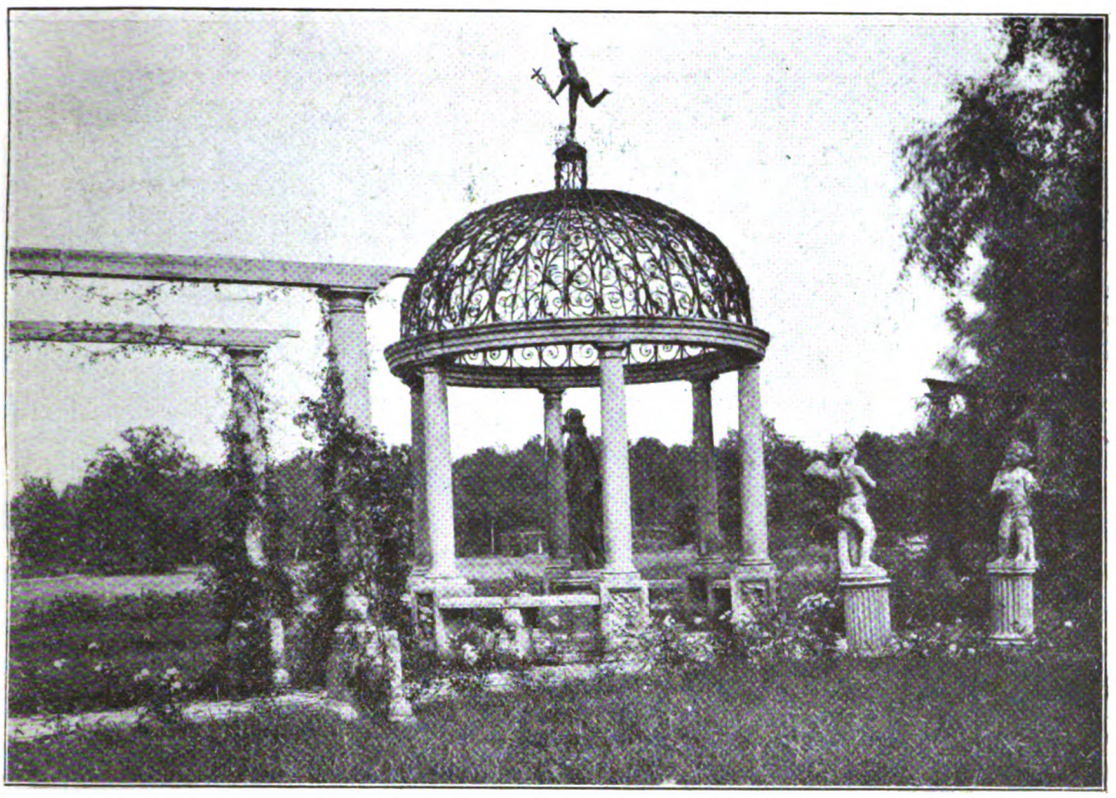
The subjects of the pictures will include the chief wars in which this country has been involved from Elizabethan times down to the present day, and will also cover the Napoleonic campaign against Prussia and the Franco-German War of 1870.

The present European war will be illustrated by views of cities and buildings in Belgium and France which have been destroyed or imperilled by the Germans; by pictures of the British Fleet by marine painters of the day, and by certain works of military interest which have been specially painted for the exhibition.

The artists represented will include Meissonier, Detaille, Robiquet, De Neuville, Boulanger, Boutigny, Grolleron, Flameng, Doré, Rochegrasse, Lady Butler, Seymour Lucas, Herkomer, Watts, Collier, W. W. Ouless, Sargent, Vicat Cole, Wyllie, Norman Wilkinson, Andrew C. Gow, Ernest Crofts, John Charlton, Caton Woodville, Lucy Kemp-Welch, and C. W. Furse.

The association between the Church and art is a favourite topic of the clergy, and is besides a reality even to-day to some extent, if not to so far as in mediæval times. The Rev. F. T. Woods, Vicar of Bradford, delivered a lecture to the members of the Bradford Arts Club, part of which may be admitted as generally true, though he would find few to agree with him in his views as to the effect of the Renaissance and later art movements. The Vicar said the Church's relationship with art was of necessity close and cordial, and it was not surprising that art should be the handmaiden of religion, because art was connected and concerned itself with the essential parts of our nature. It was the function of art to satisfy man's craving for beauty, and delight in colour, shape, and sound, and not only to satisfy the craving but to guide it in sane and proper channels, to make it not merely a craving but a cultivated taste. Art was essentially spiritual. It dealt with feelings and emotions, and with things that could not be reduced to terms of the material. It was the function of art to provide what was so eloquently described in the immortal allegory of "The Pilgrim's Progress," an interpreter's house. The Church had always taught that Nature is the art gallery of God, provided for the delectation of man. If that was

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GARDEN ORNAMENTS.—ARBOUR IN THE GARDENS AT PETWOOD, WOODHALL SPA.

so, then surely it was the high ministry and holy function of art to interpret these pictures to man. The Vicar traced the association of the Church and art from the beginning of the Christian era down to the golden age of art in Church life. Speaking of the Renaissance, he said that, unspeakably beneficial as it was in many ways, yet from the point of view of art it was little short of disaster.

ROYAL ACADEMY WINTER EXHIBITION

IN keeping with the times, the winter show of the Royal Academy is this year a "War Relief Exhibition in aid of the Red Cross and St. John Ambulance Society and the Artists' General Benevolent Institution." True that a third of the price at which the pictures and pieces of sculpture are offered for sale is in most cases to go to the artists; there is in this no reflection upon their charity, which is marked also by the general fixing of prices at what must be considered as war prices.

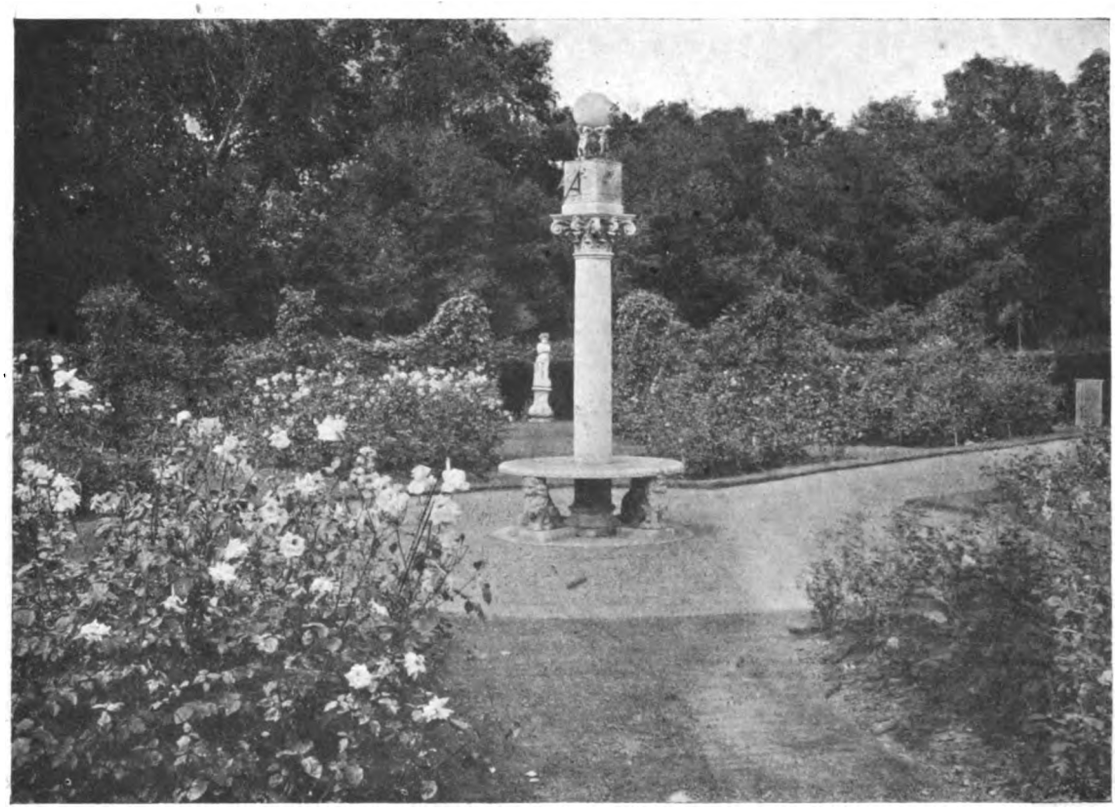
The most striking feature of the Exhibition to our mind is that the works offered for sale are eminently pictures and sculptures to be lived with. The great canvasses and colossal groups that are only suitable for large galleries and public ownership are absent. Another notable point is the catholicity of the collection. It is not a typical Royal Academy Exhibition marked by the absence of work of younger men of "advanced" views and impatient of Academical propriety. It may be said, perhaps, that all the exhibitors have not given of their best or of their most characteristic work; but there are sufficiently daring productions that would have scarcely ventured to seek, and would almost certainly not have found, acceptance in a regular summer exhibition of the Royal Academy.

Naturally there are several topical pictures, such as Mr. John Lavery's "The Green Park, December 1914," with its tents and cavalry, but more to be esteemed for its appreciation and rendering of London's own delicate blue-grey haze, characteristic of its winter atmosphere. Next to this hangs Mr. Walter Sickert's "The Integrity of Belgium" a "plein air" battle picture notable for its fine expression of movement. Mr. Sargent's "Rialto" in the same room (gallery III.) is one of the most notable pictures in the Exhibition, with its brilliant study of dazzling sunlight and rippling water, into which a gondola is emerging from the luminous shadow under the bridge. Next in the catalogue comes "The Vintage," by Mr. Charles Shannon, a work of which the meritorious qualities of restraint, elegance and coolness, and good composition suffer from the proximity. Mr. Richard Jack's "Whither"? is one of the topical pictures, but it is more, in its skilful combination of reality and idealism and its well considered colour scheme.

Mr. G. W. Lambert's "Hospital" in the first room also touches the topical and unites fantasy therewith in the introduction of a dream vision of floating female figures, contrasting beautiful forms with the grim realities of a surgical ward. The equal solidity of rendering of the dream figures with those of the real persons of patient, doctors and nurses gives poignancy and avoids any mawkishness of sentiment which less capable handling might have introduced. In this same room Mr. Wilfrid G. Von Glehn's "The Piazzetta, Venice: from a Gondola" is a charming and vivacious piece of colour, though the planes of the various parts of the scene are unhappily confused. Mr. D. Y. Cameron's "Bencleuch," a near neighbour on the walls, must not escape notice, with its long-stretched horizontal parallel lines emphasising the spaciousness and quiet dignity of a typical Highland landscape. Another piece of pleasant and piquantly restful scenery is seen in Mr. Leslie Thomson's "The Shore: Arisaig," where again the value of horizontal parallelism is enforced.

Of the sculpture, the water colours, the black and white, we have not space to speak in detail even though we leave unmentioned many other oil paintings of note, but our personal interest was attracted by the "Hall of Columns: Karnac," by Mr. R. Phené Spiers and Mr. W. Walcot's "The Palace of Justice: Brussels." Suffice it to say that the Exhibition is an enjoyable one by reason of its limitations in extent of covered wall and in size of frames, as well as for the character of the work exhibited.

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GARDEN ORNAMENTS.—SUNDIAL IN THE ROSE GARDEN AT PETWOOD, WOODHALL SPA.

NOTES ON BOOKS.

"An Introduction to Town Planning." A Handbook dealing with the Principles of the subject and a consideration of the Problems involved, Powers of Local Authorities, &c. By Julian Julian, B.E., Borough Surveyor, Cambridge. With Appendices on Garden Cities and Garden Suburbs, Schedule of Town Planning Act, &c. With diagrams and plans. (London: Charles Griffin & Co., Ltd. 5*s.* net.)

THIS Handbook is an introduction, and it is nothing more. That is to say, it barely touches the fringe of the many diverse elements concerned in town planning, although it deals—in fragmentary fashion—with ancient town planning in Rome, Athens, Colchester, and Winchester. Thus the first chapter, which is devoted to this subject, illustrates the general character of the book. It tells us something of ancient town planning, but leaves much unsaid. So also with chapters on Mediæval and Modern Town Planning and By-laws. In a small Handbook such as this, which professes to be an introduction to a great subject, there is too much irrelevant matter, and space is wasted on the relation of incidents which might have been more profitably utilised. The best feature of the book is a list of books which specially or incidentally deal with town planning, because—although it is, as described, "short," and is incomplete—it does indicate some sources of information for the prospective student of town planning. The title of the book would be more correct if it were styled "An introduction to the study of town planning," for which it might serve. It is certainly misnamed by its present title.

"Notes on the Valuation of Real Property," containing examples of freehold and leasehold properties. By H. G. Lamputt, Associate of the Auctioneers' and Estate Agents' Institute. (London: Crosby Lockwood & Son. 1*s.* 6*d.* net.)

OF the subjects which cannot be taught by books one would scarcely be far wrong in assigning the premier position to the valuation of real property, and this little book, intended for those taking the Intermediate examinations held by the Auctioneers' and Surveyors' Institutions, either belittles the character of those examinations or fails to substantiate the claim that it "contains a general knowledge of the principles and practice of the valuation of real property." This it certainly does not contain, and if it is correct that the "general knowledge" is "as required in these examinations" we are sorry for the examinations. All that the book does contain is an explanation of the calculation of the figures in valuations when the value has been determined. It is a pity that the author has not given the student some indication of the principles and practice by which a valuer arrives at the determinant factor or factors of a valuation. Some of the examples given are ludicrous in the falsity of the determinant factor assumed, as, for example, the site "of a freehold shop situated in the City occupying an unique position" is by the author stated to be "worth a ground rent of 6*d.* per foot super." The position must indeed be unique.

The London Building Acts, including the London Building Act, 1894; the Amendment Acts of 1898 and 1905; L.C.C. General Powers Act, 1908 and 1909; the Cinematograph Act, 1909; Town Planning Act, &c. A Text-book on the law relating to building in the Metropolis. For the use of architects, surveyors, builders, &c. Containing full text of the Acts, together with the current by-laws, standing orders, and regulations of the London County Council, the Corporation of the City of London, &c. By Professor Banister Fletcher, J.P., D.L., F.R.I.B.A., F.K.C., &c. Fifth edition. Revised, re-arranged, and enlarged, with further notes and cases, by Banister Flight Fletcher, F.R.I.B.A., F.S.I., architect, barrister-at-law of the Inner Temple, and Herbert Phillips Fletcher, F.R.I.B.A., F.S.I., architect, A.M.I.C.E., barrister-at-law of the Middle Temple. Illustrated with numerous plates. (London: B. T. Batsford, Ltd. 10*s.* 6*d.* net.)

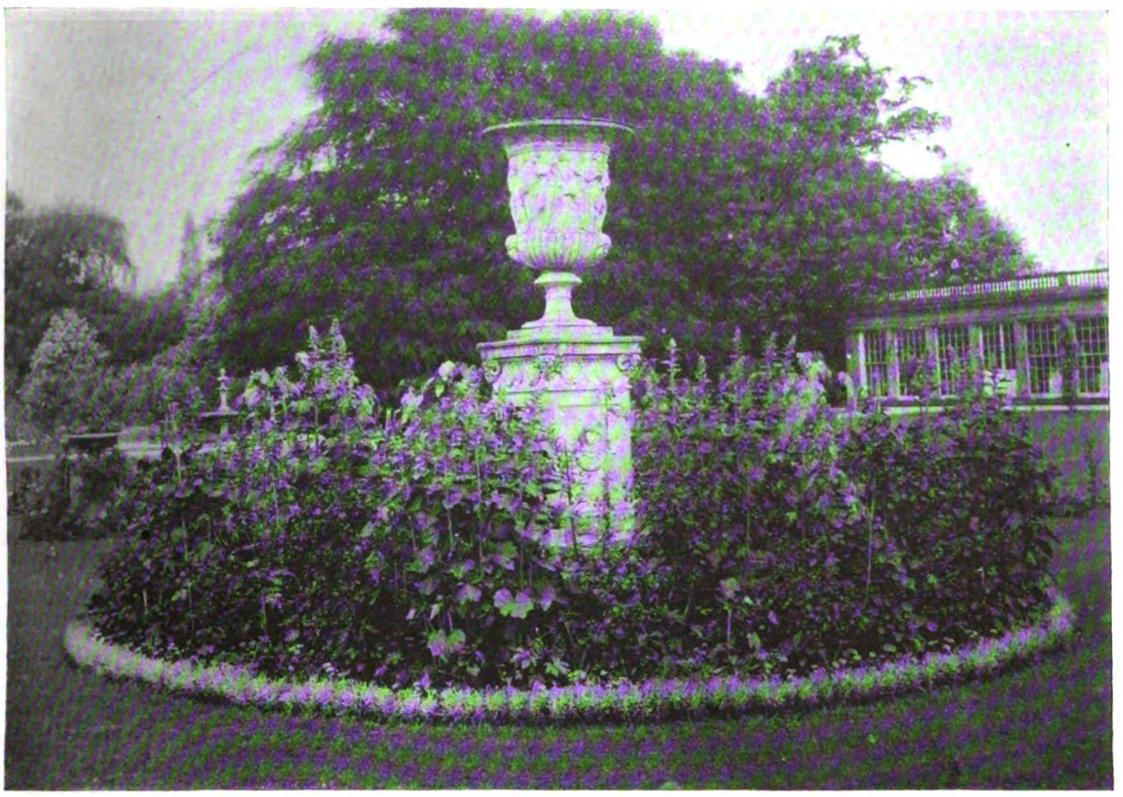
Dilapidations and Fixtures. A text-book in tabulated form for the use of architects, surveyors, and others. By the same authors. Seventh edition. Revised and largely re-written. (London: B. T. Batsford, Ltd. 6*s.* 6*d.*)

TEXT-BOOKS that have run into fifth and seventh editions have thereby proved their value beyond dispute. All that need be said of the latest editions is that they are a manifold improvement on their forerunners.

"Stencils and Stencilling for All Purposes: Artistic and Decorative." By Arthur Louis Duthie. (London: The Trade Papers Publishing Company, Ltd.)

ALTHOUGH the preface to this book lays stress on the attention given by the author to details of design, it is rather

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GARDEN ORNAMENTS.—VASE AND SCULPTURE GALLERY (ON RIGHT) IN GARDENS AT BROCKLESBY PARK.

for the admirable exposition of the technique of stencilling that we consider it worthy of high commendation. As regards the treatment of design, we acknowledge that the limitations of stencilling and the effect of those limitations on the design of stencils are well treated; but in order to design a satisfactory stencil one must learn first of all to design, and there is some fear in our mind that the numerous examples of stencils given in the book, some of which are excellent and some otherwise, may be regarded rather as patterns to be copied by decorators, for whom "the present volume has been written mainly." But for the artist or craftsman who has already learnt what is and what is not good in design the book will be very valuable as helping him to design with due regard to the capabilities, as well as the limitations, of stencilling, and still more valuable as an assistance to the operative part of stencilling. To get the best out of the craft there is required not only an artist to design the stencil, but an artist to apply it when cut. Stencilling is far from being a mere mechanical process. It is, on the contrary, capable of great individuality of expression when operated by an artist.

Estimating: being the Analysis of Builders' Prices. With full information of estimating, containing analyses, tables detailing prices, and useful memoranda. By Thomas D. L. Piper. With sixty-five illustrations. Part II. Pavior, mason, carpenter. (Portsmouth: Holbrook & Son, Ltd.)

As far as such books can go, Mr. Piper's volumes on estimating are of practical value to the young estimator as showing what matters must be taken into consideration in pricing any individual item in a bill of quantities; but in every case the estimator will, of course, find it necessary to acquaint himself with the actual prime cost both of material and labour in the particular business with which he is concerned. Not only can one business buy better than another in certain commodities, but usually it is at a disadvantage with the same competitor in respect of others. There is also frequently present the phenomenon that skilled workmen as well as labourers in one firm's employ give a better output in one trade than in another, and the profitable trade is not the same with every firm. Hence accurate estimating depends upon an accurate knowledge of the actual prime cost of every item of material and of labour in the particular circumstances of each individual firm. No book of prices, even carefully analysed as in Mr. Piper's writings, can be universally correct, and estimating from price-books must always be on the principle that "What you loses on the round-abouts you makes up on the swings."

THE ROYAL INSTITUTE OF ARCHITECTS OF IRELAND.

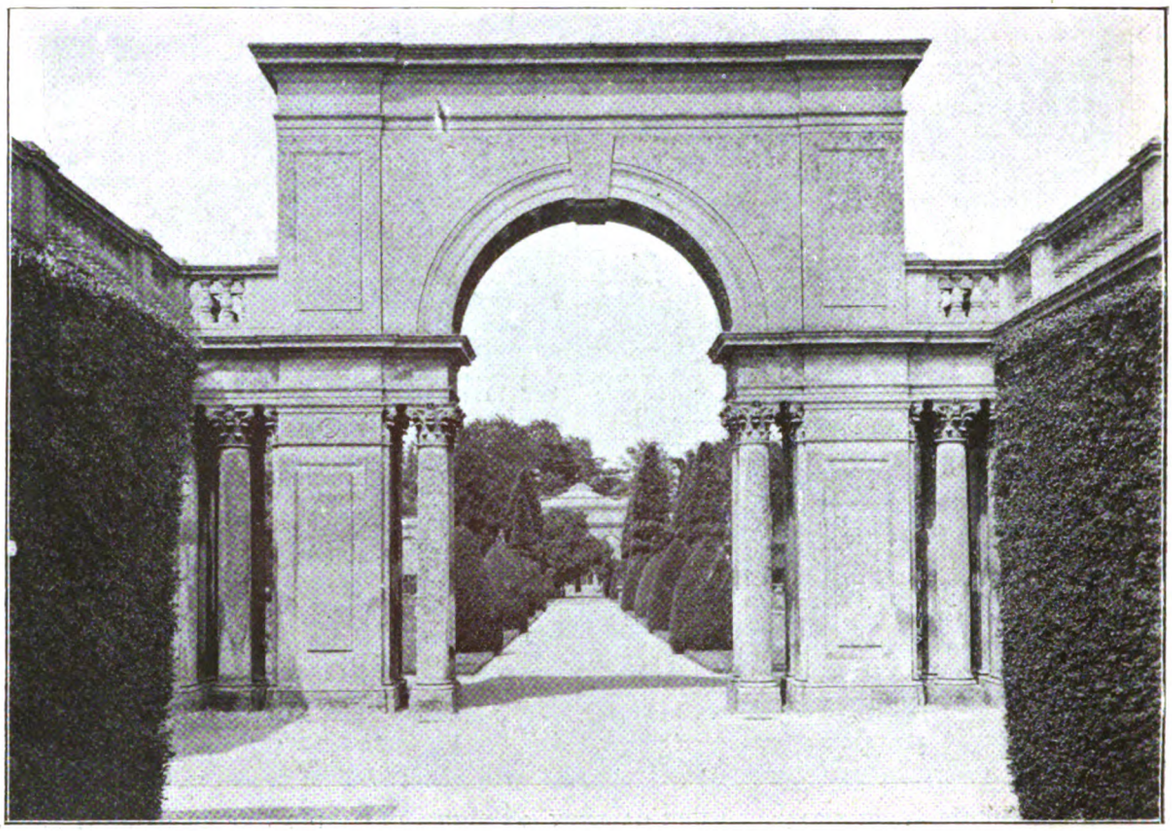
AN ordinary meeting of the Council of the above body was held at the Institute rooms, 31 South Frederick Street, Dublin, on Monday last, the 11th inst, at 11 A.M. Owing to the unavoidable absence of the President and Vice-President, Mr. C. A. Owen occupied the chair, and there were also present: Messrs. A. G. C. Millar, H. Allberry, W. A. Scott, F. Hayes, P. L. Dickinson, L. O'Callaghan, J. H. Webb, and F. G. Hicks (Hon. Secretary). The minutes of the previous meetings were read and signed, and a considerable amount of correspondence dealt with, including a letter from the City Treasurer asking that the Arts Committee of the Institute might inspect and advise on the suitability of the proposed frescoes in the City Hall. The following sub-committees were appointed: Professional Practice—W. Kaye-Parry, J. H. Webb, and F. Batchelor; Publication—F. Hayes, C. A. Owen, and Harry Allberry; Arts—G. P. Sheridan, L. O'Callaghan, and W. A. Scott; Examination—R. M. Butler, A. G. C. Millar, and A. E. Murray; Library—L. O'Callaghan, G. L. O'Connor, and P. L. Dickinson. The Arts Committee was instructed to deal with the formation of a record of ancient buildings of architectural interest throughout Ireland. Having transacted other business of the Council, the meeting concluded.

COMPETITION NEWS

SHEFFIELD.—The Estates Committee are asking from the Council authority to arrange forthwith an open competition for the planning or laying-out of roads on the High Storrs estate, with a view to development for building purposes.

MR. A. H. MOORE, A.R.I.B.A., is the architect to the rebuilding of No. 2 Royal Exchange Avenue and Nos. 18, 20, and 21 Finch Lane, E.C., for the British Dominions General Insurance Co., Ltd. The contract has been let to Messrs. Patman & Fotheringham, Ltd., of 100 and 102 Theobalds Road, W.C., and Islington, N.

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GARDEN ORNAMENTS.—ARCHWAY IN THE GARDENS AT CASTLE ASHBY.

ILLUSTRATIONS.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE. NEW CHEMISTRY LABORATORY.

THE chemistry building has a frontage to Gower Place of 316 feet, and the drawing shows the principal entrance in the centre.

The whole of the front is in Portland stone. The building contains large laboratories for organic, inorganic, physical, technological, and pathological chemistry, a large lecture theatre to accommodate 230, two smaller theatres each to accommodate 110, museum, library, professors' laboratories and private rooms, also balance, preparation, and other necessary rooms and offices. A feature of the building is a series of separate smaller laboratories for special research work. The building is connected with the north wing of the main block of University College by a corridor across Little Gower Place, which leads direct to the eastern staircase, which will be the one mainly used by students. The principal staircase is opposite the main entrance, and serves all floors. There is also a private entrance and staircase to the research wing at the extreme western end of the building, and an outside escape staircase at the extreme eastern end serving the large second-floor laboratories and the principal lecture theatre.

The general contractors were Messrs. Dove Bros.; the iron railings and lamp standards outside, and staircase ballusters, &c., inside, were made by the Birmingham Guild; Messrs. Davidson & Co. are supplying the fans for the general ventilation (the ventilation from fume-cupboards being managed separately); and the extensive internal fittings are now being made by Mr. James Carmichael. The architect is Professor F. M. Simpson, F.R.I.B.A.

ASHMOLEAN MUSEUM AND UNIVERSITY GALLERIES, OXFORD.

THE work of Charles Robert Cockerell should be of peculiar interest at the present day, when the use of modernised Greek detail is again becoming fashionable.

ELEMENTARY SCHOOL, LINDA STREET, BATTERSEA.

THE drawings we reproduce were submitted by Messrs. Nicol & Nicol in the open competition promoted last year by the London County Council.

THE RADCLIFFE LIBRARY, OXFORD.

THE drawing of this well-known work of James Gibbs was made by Mr. Charles S. Carter during his tour as holder of "The Architect" Travelling Studentship in 1914.

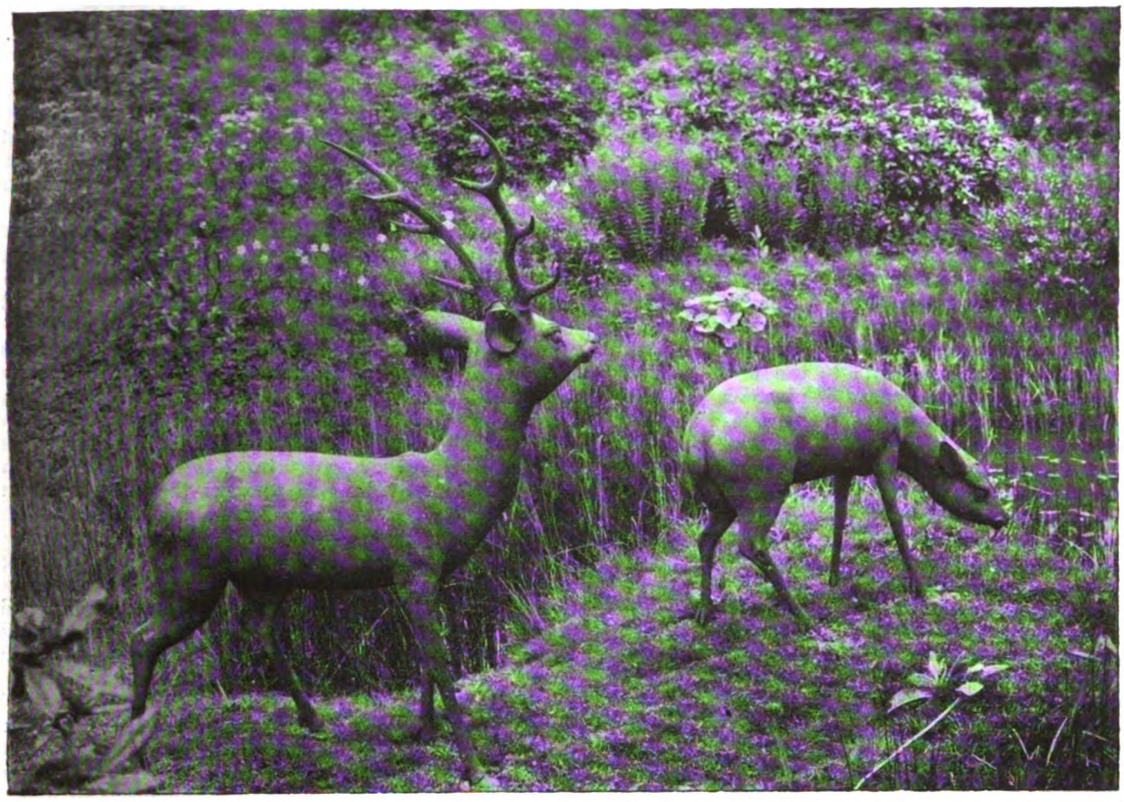
ANTWERP.

ANTWERP'S modern prosperity—anterior to the war—has diminished its picturesqueness, but much still remains, though not to the same extent as when Samuel Prout made the drawings included in "Continental Sketches."

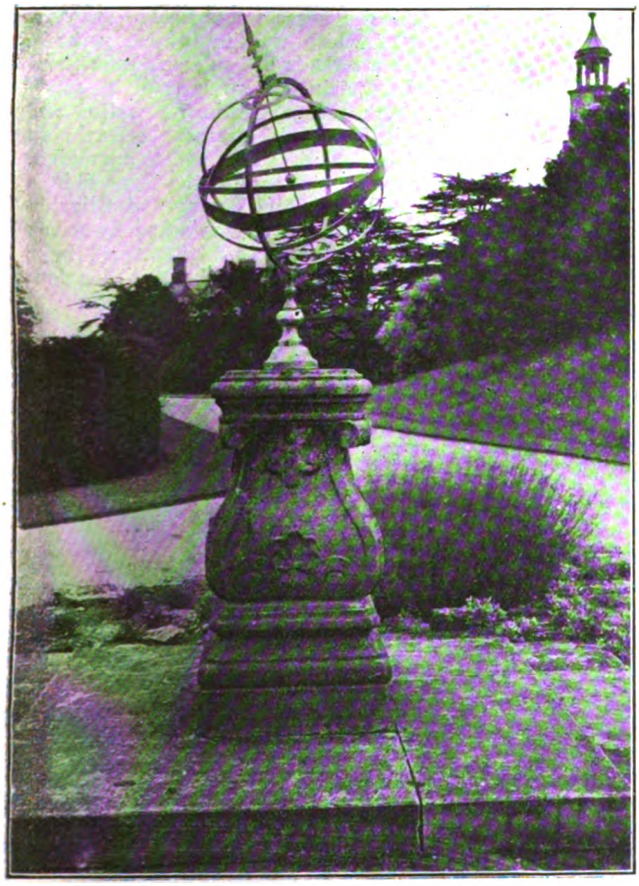
GARDEN ORNAMENTS.

THE ornamentation of a garden, apart from its horticultural adornment, requires much artistic taste on the part of the architect, the sculptor, and the worker in wood and metal. In recent years there has been a marked improvement in the design and execution of garden ornaments, but there is still scope for further effort, and, as this class of work is likely to become increasingly remunerative, it is worth while devoting considerable attention to it. People are beginning to take a keener interest in their gardens, and large sums of money are being spent on their adornment. It too frequently happens that where an architect is called in to prepare plans and superintend the erection of a private residence, someone else is subsequently employed to lay out the grounds and provide any ornaments that may be deemed necessary. This plan may work out all right, but in many instances it has proved to be a mistake. The architect is surely the person to decide upon the setting of the house he has erected, and so guard against incongruity in the ornaments employed to adorn the garden and grounds. The photographs which illustrate this note may be suggestive of what can be done in this direction. First, there is the entrance to the garden, and what can be more appropriate than a wrought-iron or bronze gate, with figures, for preference, upon the pillars? Then there are the intermediate gateways within the gardens, which are too frequently plain openings in the wall, without any attempt at architectural embellishment. How much better the Milton example is than one of the character indicated? The buildings, too, within the enclosure, such as conservatories and

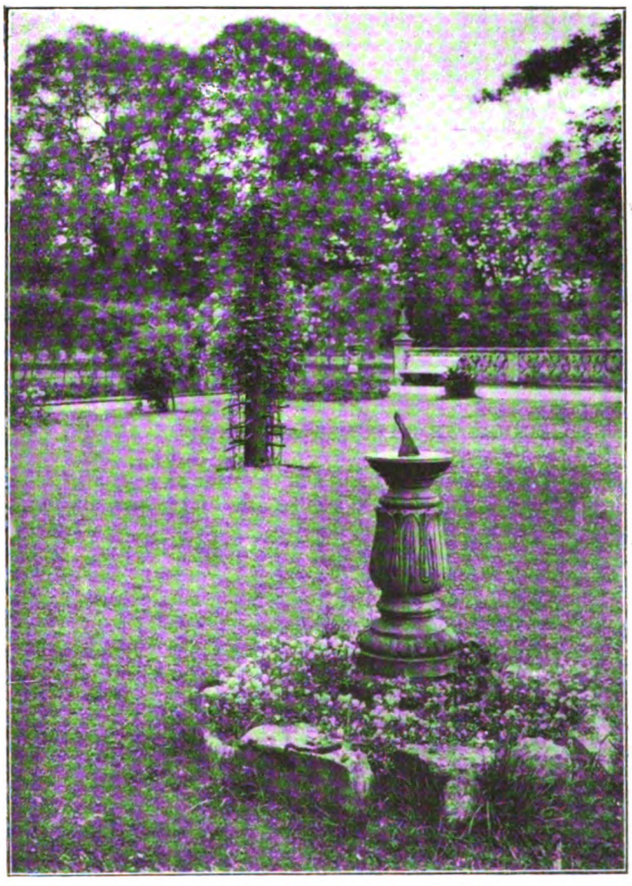
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GARDEN ORNAMENTS.—BRONZE DEER IN THE WATER GARDEN AT BELVOIR.



SUNDIAL AT WELBECK ABBEY.



SUNDIAL AT RAMSEY ABBEY.

other horticultural structures, are deserving of more attention from the architect, and these should harmonise with the style of architecture adopted for the adjacent house. The Palm House, at Castle Ashby, and the archway leading towards it, are good examples in this respect. There is happily a revival of interest in the old-fashioned sundial as a garden ornament, and there is much scope for elegance of design in the construction of the pedestal and its sur-

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rounding base. It has been said that no garden is complete without its sundial, and there is a great deal of truth in the statement.

"Serene he stands amid the flowers,
And only counts life's sunny hours,
For him dark days do not exist,
The brazen-faced old optimist."

The centre of the rose garden is an ideal position for the sundial, and the example reproduced from the garden of Major Weigall, M.P., at Petwood, Woodhall Spa, is suggestive of what may be done in this direction. Sufficient use is not made of statues in the adornment of our gardens and pleasure grounds. Where they are judiciously chosen, and placed in appropriate positions, they are very effective. Lead figures of artistic design, similar to the illustration from the gardens at Welbeck, add to the beauty of any garden. This is one of a pair recently placed by the Duke of Portland at the foot of a flight of steps leading to the



LEAD FIGURE IN GARDENS AT WELBECK ABBEY.

terrace. White stone figures, too, show up well against sombre backgrounds, or at the entrance to the pergola, or at the intersection of paths. The subjects should be appropriate to the setting of simple, but artistic, design, and anything heavy or repulsive should be avoided. There is much room for improvement in the construction of pergolas. Too frequently these are raised upon wooden supports, which, sooner or later, decay and the whole structure is endangered. Stone supports are essential for stability, and wood should only be employed for the beams from pillar to pillar, as in the modern example in the new water garden recently made for the Duchess of Portland at Welbeck. It is essential, too, that the floor of the pergola should be of stone, preference being given to irregular blocks, not closely fitted, so that small plants may be inserted in the interstices. Considerable scope is given to the architect in the designing of arbours, loggias, &c. Here, again, the old-fashioned rustic summer-house should be eschewed, and stone structures of classical design erected in commanding positions.

SIR ASTON WEBB, R.A., is acting as hon. architect in connection with the alterations to be carried out to meet the requirements of the Board of Education at the St. Bartholomew the Great Schools.

SCARBOROUGH CASTLE.

By J. TAVENOR PERRY.

WHEN Harold Hardrada went a-raiding in the middle of the eleventh century with his friend Tosty, the recreant Earl of Northumberland, we read in his Saga that "he sailed southwards past Scotland till he came to England, to a place called Kliflond (Cleveland); there he went ashore and ravaged and subdued the land, meeting with no resistance. Thereupon he sailed to Skardaborg and fought against the townsmen; he went up on a high rock near the town, and set fire to a large pile which he made. They took long poles and lifted it up and threw it down into the town; soon one house after the other began to burn, and the whole town was destroyed. The Northmen slew many people, and took all the property they could get." Similar also was the recent raid by the degenerate descendants of a kindred race, making all allowance for the altered conditions of warfare, but with the essential difference that they were afraid to land, and ran away at the first hint of danger, whereas the earlier ruffian stood up for the fight and was beaten and killed at the battle of Stamford Bridge.

This incident contains the first reference to Scarborough in the annals of our country, though its name does not occur in Domesday. Its history is closely connected with that of the Castle, for whenever that was attacked the townsmen suffered, but its strength frequently saved them from more marauders. It is evident from the above-quoted Saga that there were no Saxon fortifications on the hill at Scarborough, and excavations have shown that neither Briton nor Roman considered it necessary to strengthen the defensive position provided by Nature; thus the first castle erected was only built in the reign of Stephen, when it was undertaken by William le Gros, Earl of Albemarle, and Lord of Holderness. Henry II. resumed possession of all the Crown lands alienated by Stephen, and he seized among others "famosum illud et nobile castrum quod dicitur Scartheburch"; though it had already fallen into a ruinous condition—possibly it had been knocked about in some siege—and he built "a great and noble keep" in its place, the castellan of which was, in future, to be a royal nominee. The first attacks it had to resist were those of the Earl of Pembroke desiring to get hold of Piers de Gavestone, who had taken refuge within its walls, and which afforded an impregnable defence against the Earl; but he starved out the garrison, and Sir Piers had to surrender. It got some knocking about from one of the Bruces in a raid into the northern counties; and during the Pilgrimage of Grace it was again unsuccessfully attacked by Aske; but in 1553, in Wyatt's rebellion, Lord Stratford, by a stratagem, got into it, though he only held it for four days.



FIG. 1.—OLD TOWN SEAL.

The most exciting period of its history was during the Great Rebellion, when it underwent more than one siege; and it was in the one in 1644-5 by Sir John Meldrum, the Parliamentary general, who had gained possession of the town itself by a *coup de main*, that the incident occurred which so much damaged the Priory Church, for he planted a battlery of guns within the chancel and fired on the castle *through the East window*. The garrison in self-defence trained their guns on the church and battery, and destroyed the chancel and much more of the sacred edifice; for even a worm, let alone a German, would turn in such a case.

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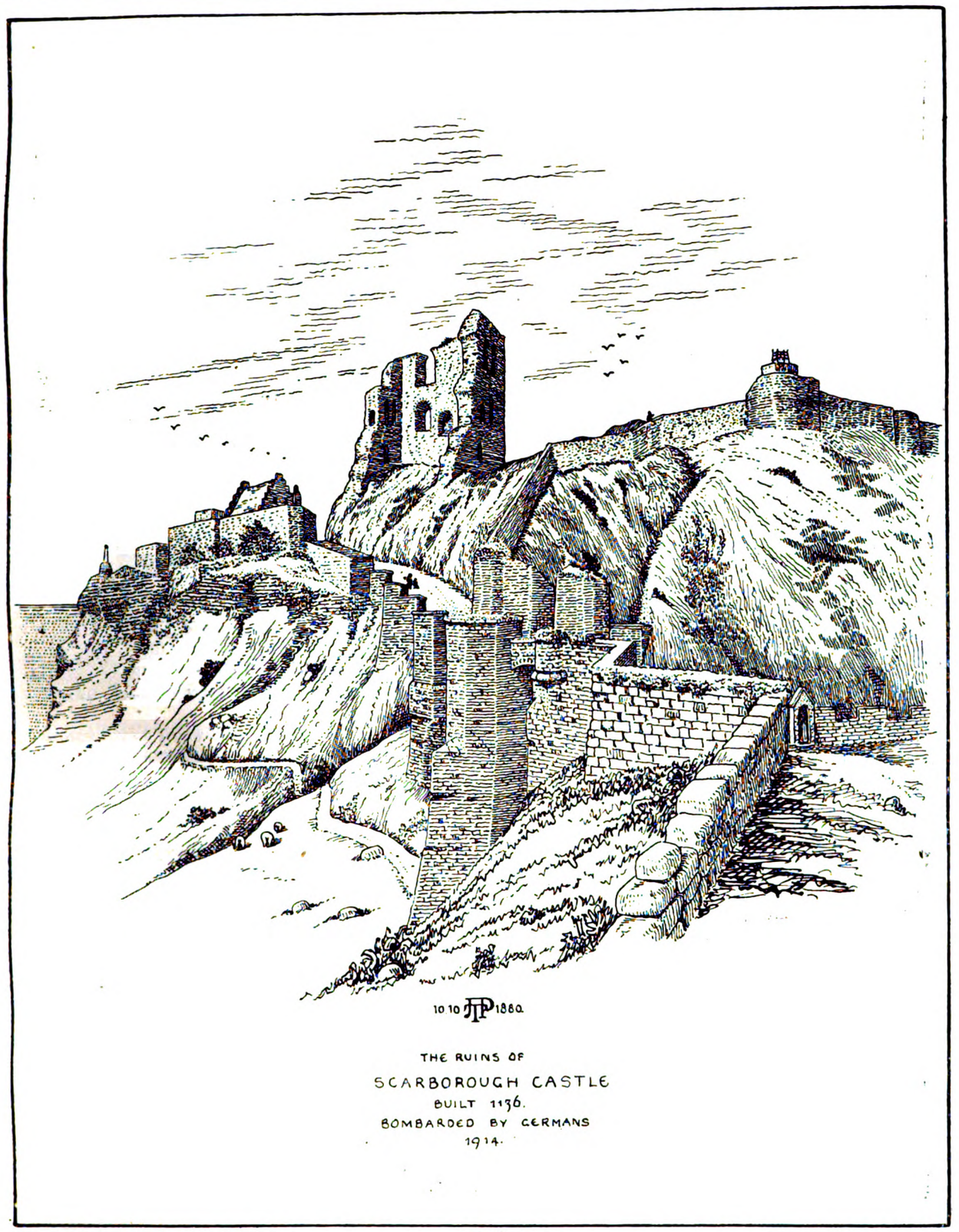


FIG. 2.

It was during the continuance of this internecine strife that the castle itself suffered many alterations, among others the towers and bastions of the curtain walls and barbican were cut down and filled with earth to make platforms for the mounting of swivel guns.

The town by the end of the thirteenth century had become so important that it sent two representatives to the Parliament of Acton Burnell (eleventh of Edward I., 1283); but it had received a charter of incorporation as early as the time of Henry II., no doubt at the building of the castle keep, and its ancient seal, of which we give a sketch (fig. 1), though varied in detail, shows no doubt, with its castellated structure and ship at sea, the design of the original one. Thanks to the defence of the castle the prosperity of the town was considerable, particularly as it was a "free mart," Flemings with linen cloths from Ypres and Ghent, and Osterlings from the Baltic, frequenting its markets; although it does not appear to have been, as was Hull, allied to the great Hanseatic League.

A reference to our plan (fig. 3) will show the general arrangements of the fortifications as now existing, and our sketch, taken from a point on the ridge to the west of the Barbican (fig. 2), gives the aspect of the ruins which the Germans affected to believe was a formidable defensive work and by their guns rendered only a little more ruinous.

The site consists of the land on the top of the lofty Scar which shows cliffs, almost inaccessible, on three sides towards the sea and is connected by a narrow ridge on the west side with the high ground running landwards. This ridge or causeway was cut through when the fortifications

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were built, and the natural depressions on either side connected by a deep moat which was afterwards spanned by a drawbridge. In the centre of the plateau stands the ruin of Henry II.'s keep, which was when perfect 56 feet square—the Keep of Dover being 96 by 98 and of Rochester 70 feet square—the walls were throughout 11 feet thick and their greatest height about 90 feet. The material of which it is built is a deep red sandstone properly coursed in beds about 12 inches thick, with stones squared to about 2 feet or 2 feet

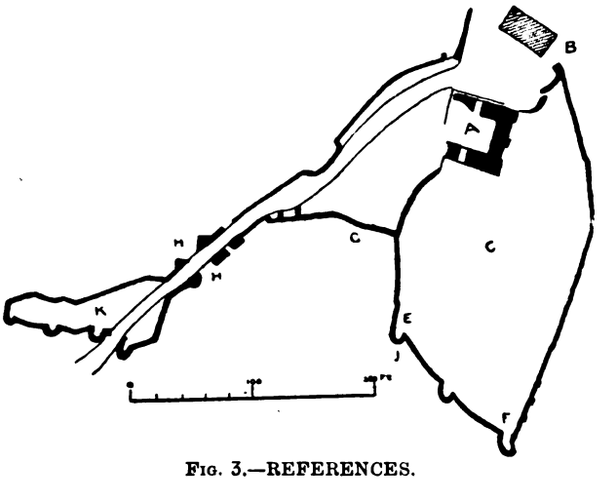


FIG. 3.—REFERENCES.

A—Keep.	F—Flagstaff.
B—Gateway to Castle Yard.	G—Loop-holed Curtain.
C—Ballium.	H—Old Drawbridge.
D—Inner Court.	J—Castle Moat.
E—Beacon.	K—Barbican.

6 inches. The work is simple throughout and wanting in the enrichments which characterise Rochester, but has the same wall-passages, fireplaces, &c., though it is without any forebuilding or chapel connected with the keep such as is generally found in these towers.

The approach to the keep was defended by the barbican marked K on plan, of a very irregular shape built on the landward side of the artificial moat already referred to, and protecting the drawbridge, marked H on plan. From this point the road rose towards the keep guarded on each side by the percipitous slopes of the cliff as well as by curtain walls, the southern of which, looking over the town, is loopholed. At the end of this road and just beyond the keep was a gateway, now destroyed, which led into the inner court (see B and D on plan). Occupying the highest part of the plateau is the Castle Bailey, C on plan, protected all round by independent walls and ditches and with round towers at intervals on the landward side, on one of which—E on plan—was the beacon, the great iron cresset of it still remaining. There were numerous important buildings, such as the hall and chapel, standing in the inner court; but these have all disappeared and, save the shell of the great keep and the curtain walls and barbican, nothing remains of that noble fortification that was once called Scartheburch.

Some slight notice must be taken of the Priory Church which occupied a portion of the ridge on which the castle was built, as, though these two did not run well together in harness, they were intimately associated in each other's good or evil fortune.

The date of the foundation of the Parish Church is uncertain, and as the town is not mentioned in Domesday and no church is spoken of as having been destroyed in the raid of Harold Hardrada, it is probable that it was first built, like the neighbouring castle, only in the reign of Stephen. It was given, together with its chapels, one of which formed the Castle Chapel and stood in the inner court, in 1198 by Richard I. to the Abbey of Citeaux, and Cistercians forthwith established a priory at Scarborough for the monks sent over from Burgundy to look after their rectorial interests in the place; and later Henry III. granted the land on which to erect their conventual buildings. As the monks, however, sent all their revenues abroad Edward I. in 1285, Edward II. in 1337, and Edward III. in 1361 intercepted this flow of wealth to an alien enemy and applied the confiscated funds to their own needs. On the suppression of the "Alien Priories" by Statute 2 of Henry V., 1413, it was given to the Prior of Bridlington, a house of Austin Canons, but at the Dissolution the rectory was seized by Henry VIII. and the Priory and Convent suppressed and all the conventual buildings then, or gradually afterwards, destroyed.

No remains of the church of Stephen's time exist, but before the destruction of the chancel the whole formed a cruciform structure generally Early English of the best period, except Decorated additions and the chancel and north porch, which were Perpendicular. The nave has two north aisles, the outer one being fifteenth-century work, and one south aisle with four projecting and different chantry chapels covered with ribbed vaulting. There were small western



FIG. 4.—REMAINS OF THE PRIORY CHURCH OF ST. MARY

towers at the end of each aisle which do not now, however, appear above the roof, and these opened into the aisles with Early English arches and clustered piers. The west end of the nave, between the towers, has clustered vaulting shafts rising to the roof, and the front is lighted by three lancets and a wheel window above. But all this work, together with the rest of the church, underwent a fierce restoration in 1850. It may be mentioned that some late Decorated piers with grotesque capitals to be found in the interior are said to have been brought here from another church in the town. Of the destroyed chancel a small portion remains which shows in our sketch (fig. 4), and we can only say that when complete it consisted of three aisles and terminated with a square east end. The south transept, also showing in the drawing, is much restored Decorated work, while the central tower, for which there was no authority, is entirely an erection of the seventeenth century.

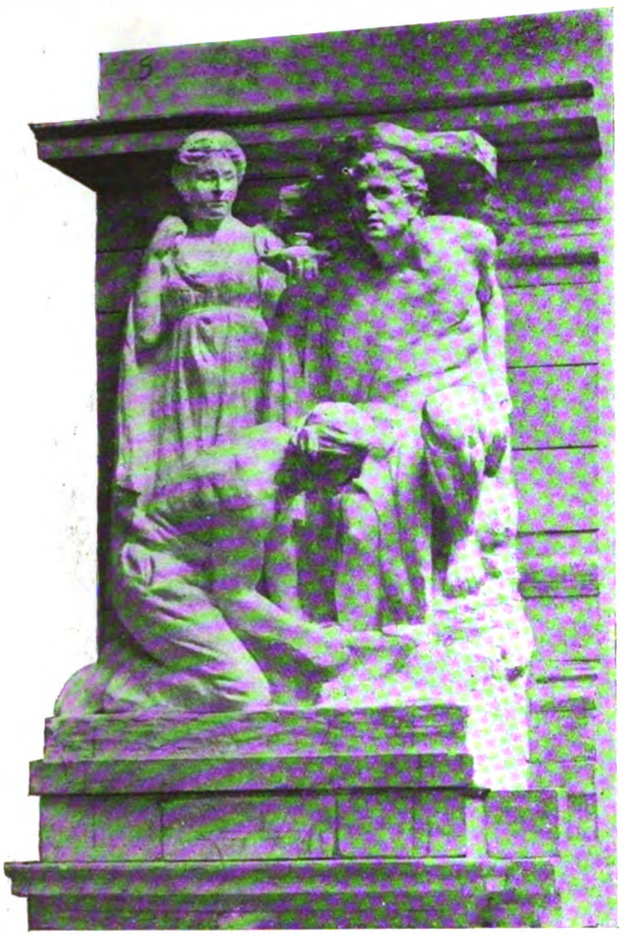
The prosperity of old Scarborough rested on the protection of its castle, and that of modern Scarborough on the patronage of its Spa: and with this for a foundation, and by aid of the charm of its position and the perfection of its hotels, it has risen to be the chief of our East Coast resorts. But in its peaceful avocations it has just been reminded of a saying almost forgotten but current in the town in its warlike days, "A blow first and a word after."

SCULPTURE FOR THE WELSH NATIONAL MUSEUM.

WE recorded some time ago the inception of a limited competition for the selection of sculptors to be entrusted with work at the National Museum of Wales. We now give illustrations of selected designs as to which the recommendations of the Building Committee, now approved by the Council, were:—To commission Mr. Gilbert Boyes (London) to carry out his design, "The Bronze Age," subject to the full-sized or half-sized model being to the assessors' approval, and that he be desired to submit a design at quarter-full-size for a companion group, "The Iron Age."

To commission Mr. Richard Garbe, London, to carry out his design, "The Stone Age," upon the same conditions, and that he be desired to submit a design for a companion group, "The Coal Age."

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THE COAL AGE, BY T. S. CLAPPERTON.



THE STONE AGE, BY RICHARD GARBE.

To commission Mr. T. S. Clapperton, London, to carry out his design, "The Coal Age," as the group illustrating "Mining," for the west front upon the same conditions, and that he be desired to submit a design illustrative of "Shipping" for a companion group.

Also to request Mr. D. Arthur Thomas, Cardiff, to submit a model for the dragons, and Mr. Bertram Pegram to submit a model for the lions required for the pedestals surrounding the base of the dome.

The photographs are by the *South Wales Daily News*.

THE SOCIETY OF ARCHITECTS.

WE give an abstract from the Report of the Council for the year ended October 31, 1914, of matters that are of wider interest than the domestic concerns of the Society:—

Statutory Registration of Architects.—In November, 1913, your Council completed its revision of the Society's draft Registration Bill, and the document was settled in conference with Sir Alfred Cripps, K.C., M.P. (now Lord Parmoor). The Bill was then published in the Society's *Journal*, and was issued to the professional Press and made public generally, with a view of inviting observations and criticisms thereon. As a result of this publicity a number of useful opinions and suggestions were received and noted for future consideration.

A copy of the Bill was also sent to the Councils of interested professional bodies. No objection was raised by them on the question of principle, but the Auctioneers' Institute sought to have that body scheduled in the Bill, and the Institution of Municipal Engineers thought their members were not sufficiently protected. Your Council did not see its way to meet the wishes of the Auctioneers' Institute, and consider that the members of the Institution of Municipal Engineers were already sufficiently covered, though your Council was prepared to discuss the matter with the Institution.

The Society's proposals attracted a good deal of attention among other professions, notably the dentists, whose organ, *The Dental Surgeon*, pointed out that if certain sections of the Dentists Act (relating chiefly to restriction of the title of dentist to qualified persons, and recovery in a court of law of charges for professional services) had been drawn on the lines of similar clauses in the Society's Bill, the present position of affairs in the dentists' profession would never have come about.

Some useful criticism was also received from *The South African Architect*, based on experience of the working of the Transvaal Architects Act, which it will be remembered the Society was to a considerable extent instrumental in securing. The Journal in question holds the view (on which some difference of opinion exists in the profession in South Africa) that a Registration Bill should confine itself entirely to registration matters, and should not include any provision for educating the architect before registering him, the point being that architects should not be taxed to assist in further filling an already overcrowded profession. Your Council, on the other hand, considers that one of the advantages of Statutory Registration would be that an Act such as that proposed by the Society would at once define a standard of architectural education, and that everyone desirous of taking up the profession in the future would know what was required of him before spending time and money in endeavouring to qualify.

At a meeting held on January 5, 1914, the general body of the R.I.B.A. decided not to proceed with a Registration Bill, at any rate for the present, but to apply for an extension of their Charter to enable them to confer the title of "Chartered Architect" upon all persons passing a stated examination. It was understood that this decision was come to owing to the R.I.B.A. Council having been notified by their legal advisers that the Institute could not promote a Parliamentary Bill on this subject, because of certain constitutional disabilities under which the non-corporate class of Licentiates were suffering.

It then became, from the Society's point of view, a question of voluntary versus statutory registration, the essential difference between the registration proposals of the R.I.B.A. and of the Society being that the former favoured a policy of voluntary registration within the Institute, and the latter a policy of statutory registration for every member of the profession, whether belonging to any architectural body or not.

The feeling of some of the members of the Institute on

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the Charter question may be gathered from the fact that Committees of Associates and Licentiates were formed with a view of watching their own interests.

Your Council had in the meantime taken steps to submit a counter petition to the Privy Council in the event of the Charter proposals being proceeded with.

Last March the then President of the R.I.B.A. circularised the Allied Societies to the effect that the Council of the Institute had decided to oppose the Society's Registration Bill on the ground that it was detrimental to the interests of the Institute, and conflicted fundamentally with their new policy of registration by charter. Your Council thereupon issued a counter statement through the professional journals and direct to the provincial societies, showing at a glance the difference between the proposals of the two bodies.

About this time the Auctioneers' and Estate Agents' Institute presented a Bill to Parliament, the object of which was to establish a register of persons practising as auctioneers or estate agents dealing with real estate and to prescribe the qualifications for admission to the register.

The effect of the measure, if it became law, would be that an architect who is not a member of the Society of Architects or of one of the other scheduled bodies would not be allowed to make a valuation of real property for a consideration unless he was registered under the Act. As there are a number of architects who do not belong to the Society or any other architectural body, and most of them have to make valuations of property from time to time for various purposes, they are considerably affected by the proposed Bill. In order to continue to make these valuations they would have to register under the Act as auctioneers and estate agents, and pay an additional tax for registration fee and annual licence. The Society of Architects is one of the professional bodies scheduled in the Bill as being exempt from the operation of the Act. Here is one instance of the advantage of membership in a recognised professional body which is able to look after the interests of its members.

The outbreak of the war has put a stop for the present to the promotion of the Institute Charter in the Privy Council, and of the Society's Bill in Parliament. In regard to the latter, although the parliamentary procedure has not been gone on with, every opportunity is being taken by the Society to further prepare the ground for future propaganda should it be necessary to resume the promotion of the Bill in Parliament after the war. The hope has been expressed, and it is one in which your Council concurs, that as the war has had the good effect of drawing together the members of the architectural profession without reference to architectural politics, that this happy state may continue, and that when peace is declared it may relate not to one kind of war only, and that some method may by then have been arrived at of settling any little differences in regard to the means to be adopted in attaining the end which both the Society and the Institute have in view.

The New Zealand Institute of Architects was successful last July in obtaining a Registration Act, having accomplished in one year what the profession at home has been seeking for thirty years. It is, however, only fair to point out that the New Zealand Bill was practically a Government measure, and, although the promoters had to overcome a certain amount of opposition from interested parties, they did not have to face dissension from a section of the profession, nor were they hampered by questions of architectural politics or parliamentary procedure. They are none the less entitled to hearty congratulations on their success.

Progress has also been made in some parts of Canada which have followed the lead set by Alberta and other provinces of that dominion. In Canada all the provincial architectural bodies are federated with the Royal Architectural Institute of Canadian Architects, which greatly facilitates the organisation, administration, and control of professional matters.

The Royal Victorian Institute of Architects, Melbourne, is proceeding with a Registration Bill, and a similar measure is to be introduced in New South Wales, and also in Tasmania.

Professional Practice.—One of the duties devolving upon your Council, through its Practice Committee, is to consider and, where possible, advise on questions relating to professional practice placed before it by members. Your Council does not deal with points of law, in regard to which members are referred to their legal advisers, but the Council has been able in many cases to very materially assist the member concerned by giving him the benefit of their combined experience on the point raised.



THE BRONZE AGE, BY ALBERT BAYES.

None of the cases which have been before the Council have been of sufficient general importance in principle to be sent immediately to the Board of Professional Defence, but in several cases the knowledge that the matter in dispute had been referred to the Council of the Society was sufficient to induce the parties to come to terms.

Professional Etiquette.—Another and less pleasant duty of your Council is to investigate any allegations brought against members for a breach of professional etiquette or of the Society's regulations. In every case where such an allegation has been made, your Council has held a most careful inquiry into the facts, and when the charge has been proved to its satisfaction and the member concerned has not been able to give a satisfactory explanation, his resignation has been demanded and received.

Your Council has taken up every case of unsatisfactory architectural competitions brought to its notice, and where it has failed to secure amendments the competition has been barred and the members warned not to take part therein. On three occasions during the year the warning was disregarded and the architects concerned are no longer members of the Society

The Society has acted in conjunction with the R.I.B.A. in this matter, and as the promoters of competitions are realising that responsible architects, particularly those who are members of architectural bodies, will not take part where the conditions are unsatisfactory, the profession itself is beginning to benefit by the increased recognition of its status by public bodies and others.

In some cases members have entered for competitions and prepared their drawings without consulting the Society first, and have afterwards found themselves in a difficult position when the competition has been barred. Your Council will be glad if members will send particulars of all competitions to the Society, whether they propose to enter or not

It is the desire of your Council that the Society should be the means of practically assisting its members in any difficulties in which they may find themselves in the course of their professional practice, and that it may be able to watch and protect their interests and through them the wider interests of the profession generally.

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Cost of Building.—Your Council referred to a Committee the question of making an inquiry into the reasons for the excessive cost of building operations in the United Kingdom as compared with that in other countries, with a view of suggesting a remedy if possible. The subject is a very large one and the Committee had hardly got under way before the summer recess. Subsequently it was thought desirable, owing to the outbreak of war, that the inquiries should be suspended for the present.

Standard Documents.—Following an announcement in the last annual report, your Council is now able to say that a model form of conditions of contract has been drafted for the Society by Mr. W. Valentine Ball, Barrister-at-Law, based on suggestions made after long and careful inquiry into the matter by your Council. This matter is to be the subject of discussion at the December meeting, and it is anticipated that by the time this report is presented the form of the document will be practically settled. Your Council has also drafted, under legal guidance, a number of forms for party wall and other notices under the London Building Act. It is hoped that these documents, more particularly the form of building contract, may be found of practical service to the members.

Standardisation.—Some three months ago, in response to an invitation from the Engineering Standards Committee, your Council appointed Mr. B. R. Tucker to represent them on the Sectional Committee on Vitrified Ware Pipes, which was entrusted with the drafting of the British Standard Specification. This Committee has since completed its work, and its report has been approved and issued by the Main Committee. Your Council recommends the adoption of the specification.

Tenders in War Time.—The Institute of Builders approached your Council regarding a proviso which the Institute had authorised its members to endorse on all future tenders for building undertakings, with a view to providing for (*a*) the adjustment of any account for extras due to an increase in the cost of labour or materials owing to the war, and (*b*) a reasonable extension of time for any delay in obtaining labour or material owing to the same cause.

The question was also raised as to the liability or otherwise attaching to contracts for any damage caused by the King's enemies to works in progress. The suggestion was that a provisional sum should be reserved to cover the cost of insurance.

Your Council saw no objection to the principle of insurance against war risks, but it raised some objections to the form of the proviso and proposed a revised clause which the Institute of Builders has circulated to its members.

Your Council has received a number of inquiries from members relating to the difficulty of obtaining building materials owing to the war, and is in negotiation with the Local Government Board and other bodies which are conducting inquiries into the matter.

Northern Junction Railway Bill.—At the request of the Garden Cities and Town Planning Association, your Council appointed a representative to consider a proposition that the Society should join in a manifesto for opposing the Northern Junction Railway Bill. Mr. Percy Tubbs represented the Society, and as a result of his report it was decided to take no action in the matter.

Attendances on Sub-Contractors.—Your Council was approached by the Surveyors' Institution, who drew attention to the objection against accurate estimating imposed by the practice of leaving, in bills of quantities, the cutting away and attendance on sub-contractors to be priced in a lump sum by the principal contractor. As the ability of the Surveyors' Institution to deal with the subject of complaint depended largely upon the information placed at its disposal by architects, the co-operation of the Society of Architects was invited.

The matter was fully considered by your Council, which found itself in sympathy with the proposals of the Surveyors' Institution in principle, but suggested modifications in the method of carrying them into effect. The matter was still under negotiation at the end of the session.

Public Appointments.—Your Council has been able successfully to maintain the principle that candidature for important public architectural appointments should not be restricted to members of any one architectural body, but should be open to any bona-fide member of the profession. The case in point was that of the position of Superintending Architect for Nigeria, when the matter was taken up with the Crown Agents for the Colonies.

Your Council has also taken up with public bodies the question of the employment of practising architects rather than officials in connection with architectural works of a public character, and has approached a government department relative to officials undertaking outside architectural work in their spare time to the detriment of private practitioners.

First London Atelier of Architecture.—Early in the session the Beaux Arts Committee voluntarily released the Society from its financial guarantee, with due acknowledgment of the obligations to the Society which the Committee was under, in enabling it to carry on its work and become firmly established. The Committee asked that the privileges of using the Society's premises for its meetings and the clerical staff for its work might be renewed. Your Council gladly renewed these facilities, and in addition made a second donation of £100 from the Society's funds in furtherance of the Committee's work.

The members of the Society on the Beaux Arts Committee include Messrs. Percy B. Tubbs, E. C. P. Monson, R. Goulburn Lovell, A. Alban H. Scott, Thomas Wallis, L. Sylvester Sullivan, and the Secretary. The Atelier has now become firmly established and is recognised, even by those who at one time opposed the scheme, to be carrying on the traditions of the Beaux Arts method of architectural training on the right lines. Your Council is satisfied that its action in bringing into existence the Beaux Arts Committee and materially assisting in this work is one of the best things the Society has done, and is justified by results. There is little to show for it from a material point of view, but the influence which the Atelier is having on the future of architecture in Britain is already being felt and will undoubtedly be to the permanent good of the profession and the community.

The growth and development of the Atelier has been such that it was decided by the Beaux Arts Committee to establish a second Atelier in London, and premises had been secured when the outbreak of war put a stop for the present to any further progress in this direction. The Sous-Patron, Monsieur Chauers, was recalled to France for military duty, and all eligible members of the Atelier offered themselves for enlistment in the forces of the Crown, and those who were fit were accepted.

The Atelier is in the meantime carrying on its work successfully from the educational point of view, but under some material difficulties, and it may not be out of place to mention that architects who are interested in the movement can become members of the Atelier on payment of a subscription of £1 1*s.*, and so greatly assist the Committee in tiding over a difficult period. Many architects have taken this method of showing their approval of the principle upon which the Atelier is conducted.

Clerks of the Works.—At the request of the Incorporated Clerks of Works Association of Great Britain a Committee of your Council received a deputation from that body with a view to ventilating some questions affecting the interests of clerks of the works, more particularly in regard to the rates of wages offered to them by public bodies. It was thought that by enlisting the sympathy of architects, who were able to appreciate the points raised, something might be done in getting public bodies to see the advantage of offering such a wage as would secure the best available services.

The principle involved applies not only to clerks of the works, but to architects and members of other professions, and your Council was able to assure the deputation that they were in accord with them on this point. Another question raised by the deputation was as to who was liable in the event of injury or fatality to the clerk of the works in the discharge of his duty. Your Council, on subsequently going further into the matter, was advised that an injured person can claim for injury under Common Law, the Employers' Liability Act, or the Workmen's Compensation Act, and that therefore building owners should insure against this risk. The contract of service should be between the building owner and the clerk of the works, and the architect should, in his own interests, make sure that he does not incur any liability in the event of the building owner becoming insolvent, or from any other cause.

Architects and the War.—Within a few days of the outbreak of war, a meeting of architects, open to the whole of the profesion, was held at Conduit Street to consider the best way in which architects might offer their services to the nation during the crisis. Members of the Society were specially invited to attend a meeting, and a number of them did so.

Several resolutions were passed, and a committee was appointed to carry them into effect, the Society being repre-

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sented by the President, the Vice-Presidents, and the Hon. Secretary.

Two sub-committees were subsequently formed, one for dealing with benevolence and the other with administration. Your Council held a meeting immediately afterwards, and unanimously decided to support the movement by placing at the disposal of the Architects' War Committee the Society's premises and clerical staff for the use of any of the sub-committees. Further, it voted a grant of one hundred guineas as a contribution to a fund to be formed for providing paid work for architects whose means of livelihood were stopped by the war. It also suggested the formation of a Professional Employment Sub-Committee for the administration of the fund, and outlined a scheme to enable architects in distress owing to the war to earn a living wage by doing work of a kind which would be a benefit to the community, rather than have to depend upon benevolent aid. Your Council also undertook to appeal to members of the Society for financial assistance. These offers, donations, and proposals were accepted and adopted by the Architects' War Committee, and the first meeting of the Benevolent Sub-Committee was held at the Society's premises on September 23, and has been continued every week since. The Society is represented not only on the War Committee, but on all the sub-committees. The Benevolent Sub-Committee has developed into the Professional Employment Committee. Mr. Percy B. Tubbs, F.R.I.B.A., M.S.A., is the Vice-Chairman of this latter committee, and Mr. C. McArthur Butler is the Acting Hon. Secretary. The Society is also represented by other members on this committee, and on the Executive and General Purposes Committee, the Selection Committee, and the Main Committee (Architects' War Committee).

The Professional Employment Committee is developing a scheme of civic surveys under the guidance of Mr. Lanchester, by which means it is hoped to offer employment not only to architects and surveyors, but to members of many other allied professions. In the mean time applications have been coming in from all parts of the country from architects affected by the war who desire employment, and the committee have been able to employ a number of them on useful work. One only need be mentioned as typical—that of replacing the collection of drawings and statistics on town planning, &c., belonging to Professor Geddes. These were lost in transit to Madras (where Professor Geddes is lecturing), owing to the ship in which they were carried being sunk by the *Emden*. The fund placed at the disposal of the committee by the Society, augmented by members and others, has so far enabled the committee to deal with some of the more pressing applications, but it is obvious that a much larger sum will be required if anything on an adequate scale is to be attempted. Your Council commends the matter to the generous consideration of members who have not yet subscribed. They will have the satisfaction of knowing that their money will be spent in productive work, the execution of which will enable distressed members of the profession to tide over a bad period. The Professional Employment Committee does not give benevolent aid, but refers any case requiring assistance of this kind to the Architects' Benevolent Society.

The state of war has naturally raised many questions of importance to the architectural profession in connection with contracts which are of too complicated a nature to be more than briefly referred to in this report. Your Council is dealing at every meeting with one or other of the points raised, such as prices, war risks, &c., and generally is doing everything in its power to assist members at the present crisis.

The Society was also invited to appoint a representative on the Professional Classes War Relief Council. Mr. Percy B. Tubbs was nominated, and is taking a very active part in the work of that body.

As far as can be ascertained, every member of the Society who is eligible and in a position to do so has offered himself for enlistment in his Majesty's Forces, and those who are fit have been accepted. The only member of the Society's clerical staff who was eligible enlisted. His place is being kept open, and the Society is paying him the difference between the Army pay and his salary.

At least one member is a prisoner of war, another has been mentioned in despatches, and it is certain that all who are on active service are taking their full share of the burden. Recognising this, your Council has in every case where such request has been made to it, relieved the member on active service from the payment of his subscription during the war.

Members who from force of circumstances are compelled to remain at home are doing other useful service by serving as special constables and as members of Volunteer Training Corps, or giving up a great deal of time to recruiting or to relief work of many kinds.

SOUTHAMPTON.*

By THEOPHILUS PITT, F.C.S.

AT first sight it would be supposed that the name of this striking town was of the simplest character, containing the *ham* and *ton* so frequent in our place names, with the addition of *south* as a prefix to distinguish it from Northampton. But the earliest form of the name was Hantune, containing, according to Mr. T. W. Shore (who in his time knew all there was to be known about the district), the Celtic word *an*, water. Mr. Shore does not tell us where this form of the name is to be found, but the form Hamtun occurs in a charter of Ethelwulf of A.D. 840, where it is described as a royal town of ancient demesne.

So important was the town of Southampton that it gave its name to the county at an early date. Hamtunscire is mentioned towards the end of the ninth century, and Suthamtune first occurs about 962.

The conquest of Celtic Britain by the Saxon races, though piecemeal, was complete in this part of the country.



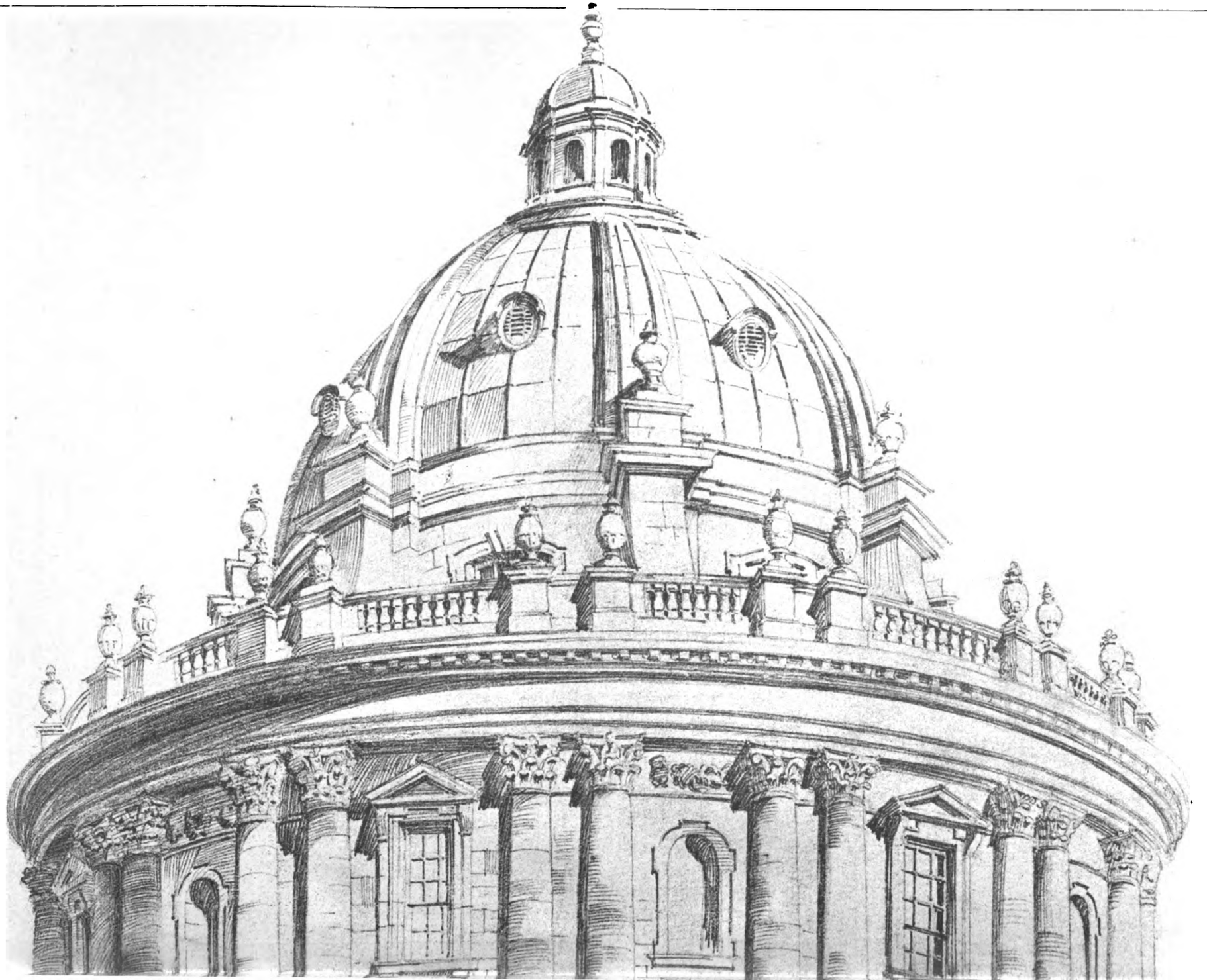
TUDOR HOUSE.

The adjoining district of Anderida, now Sussex, was raided by Ælla and Cissa, who "slew all that were therein, nor was there afterwards one Briton left." Ælla and his three sons, Cissa, Wlencing, and Cymen, left their names in Ellanore, Chichester, Lancing, and Kynor, but we know not who led the Saxon invasion of the Southampton district. It would be expected that a place on the coast having such an important situation would rapidly grow, and even in the ninth century it was more than once referred to as the celebrated place called Heamtun. It was, moreover, the water way of approach to Winchester, most famous of cities and even the seat of Government for a period. Moreover, though so much farther from the Continent than Dover, there was in the past a very prominent French influence upon the town, as you will have had strongly impressed upon you in the walk round. The Danes made several

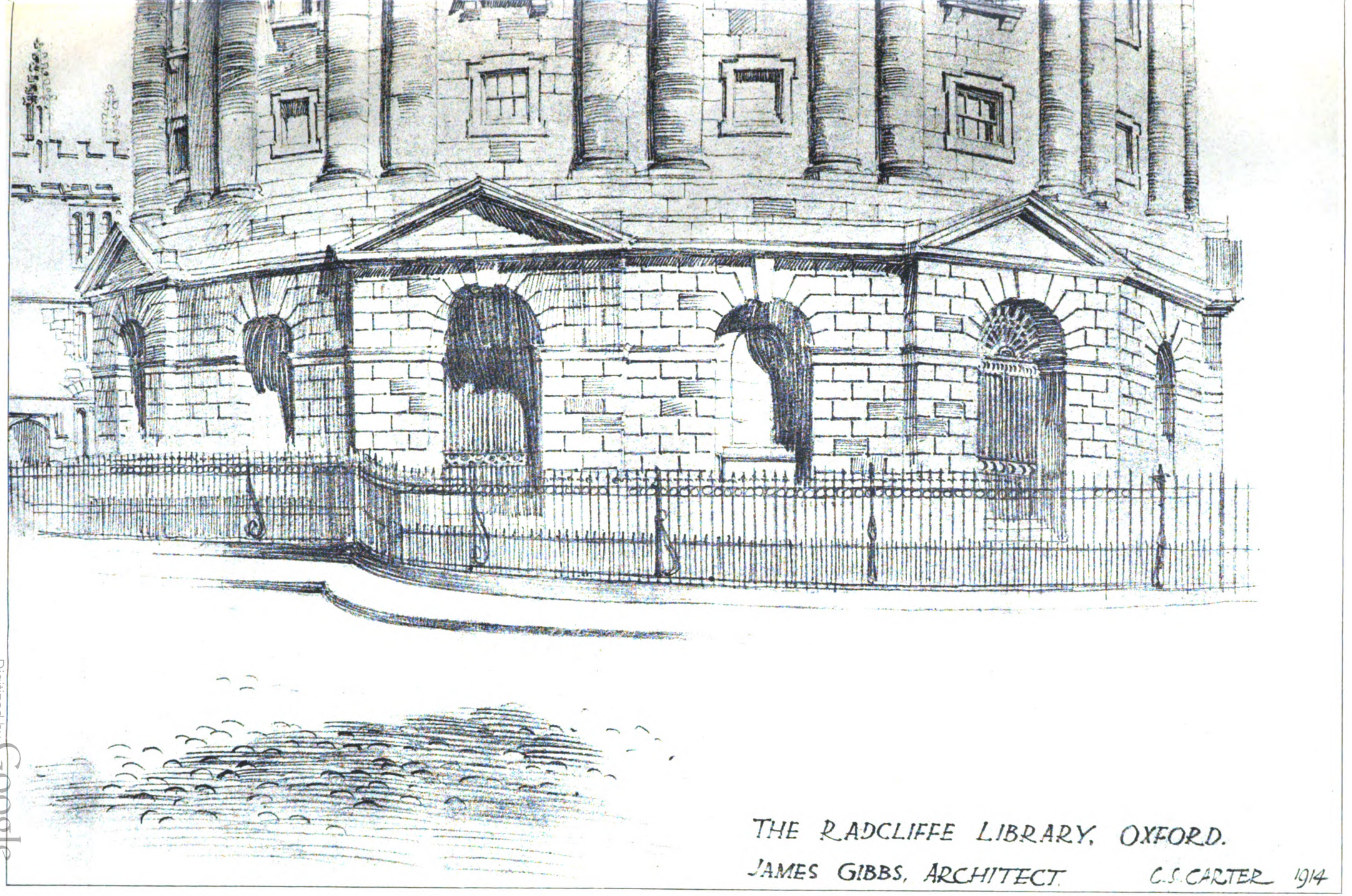
* Read at a meeting of the Upper Norwood Athenæum at Southampton.

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"THE ARCHITECT" TRAVELLING STUDENTSHIP, 1914.

From drawing by Mr. C. S. CARTER.

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ASHMOLEAN MUSEUM AND UNIVERSITY GALLERIES, OXFORD

PHOTOGRAPH BY A. E. WALSHAM, 80 DOUGHTY STREET, W. C.

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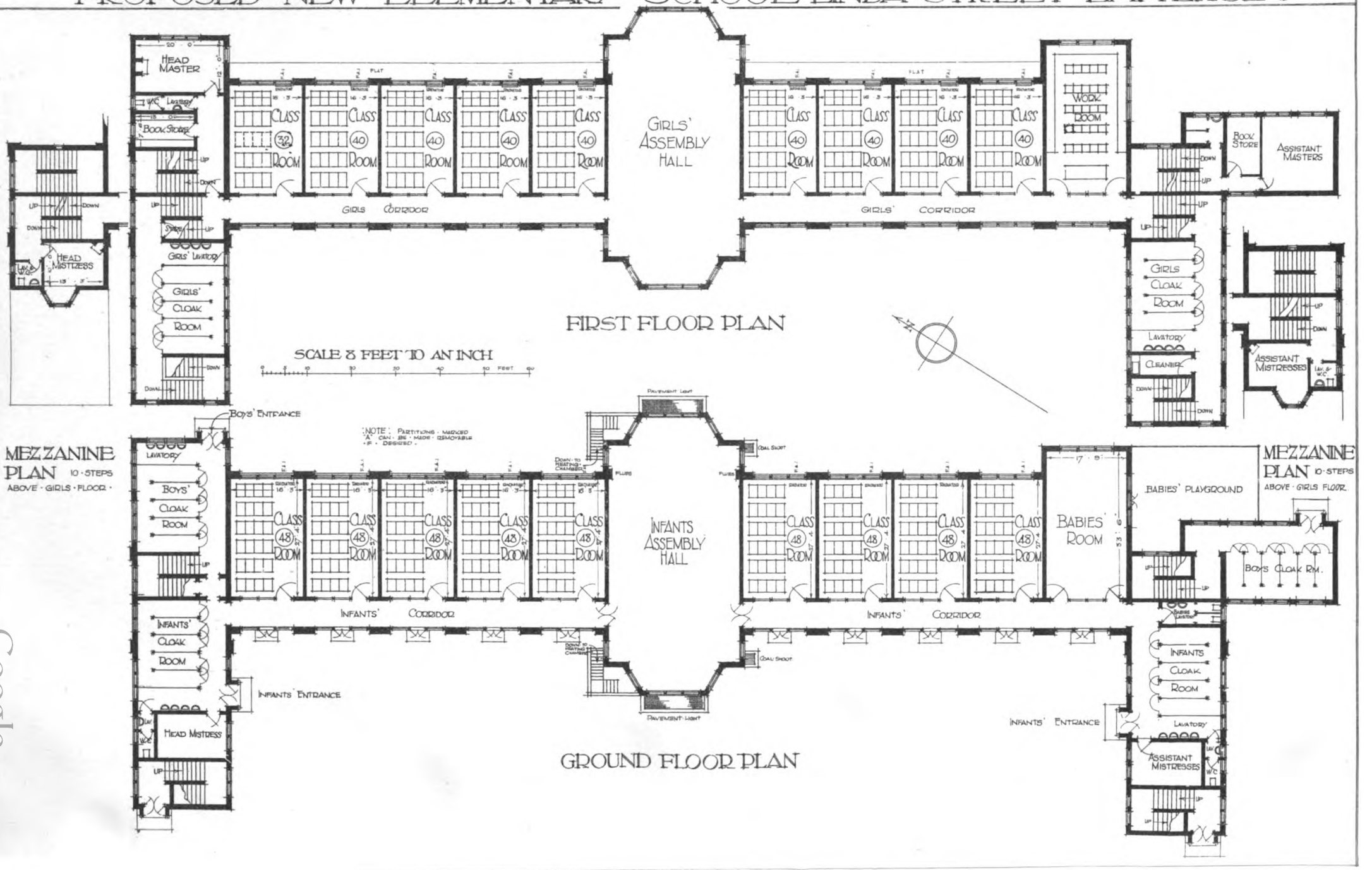
From "Continental Sketches," by SAMUEL PROUT.

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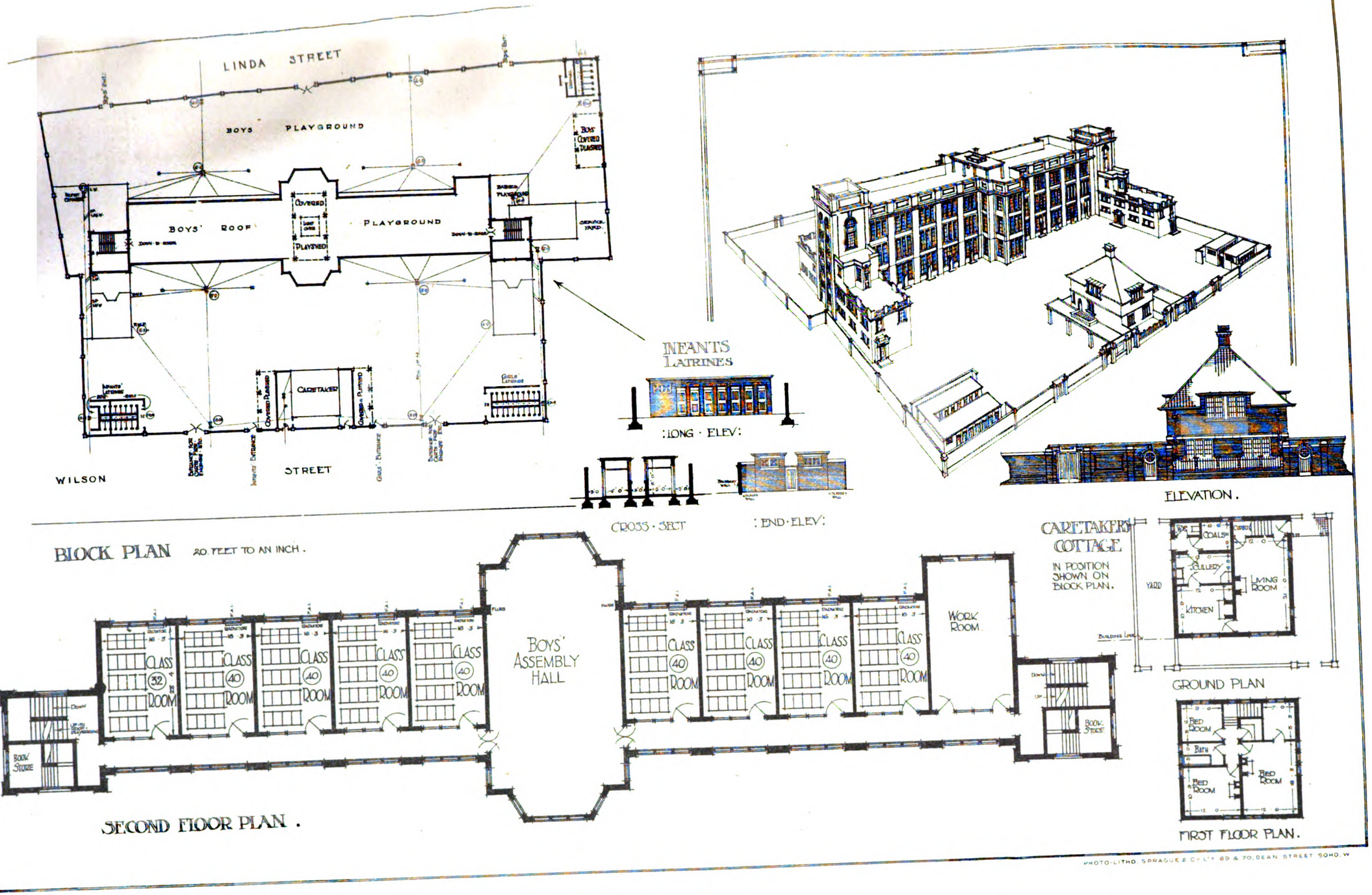
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PROPOSED NEW ELEMENTARY SCHOOL LINDA STREET BATTERSEA



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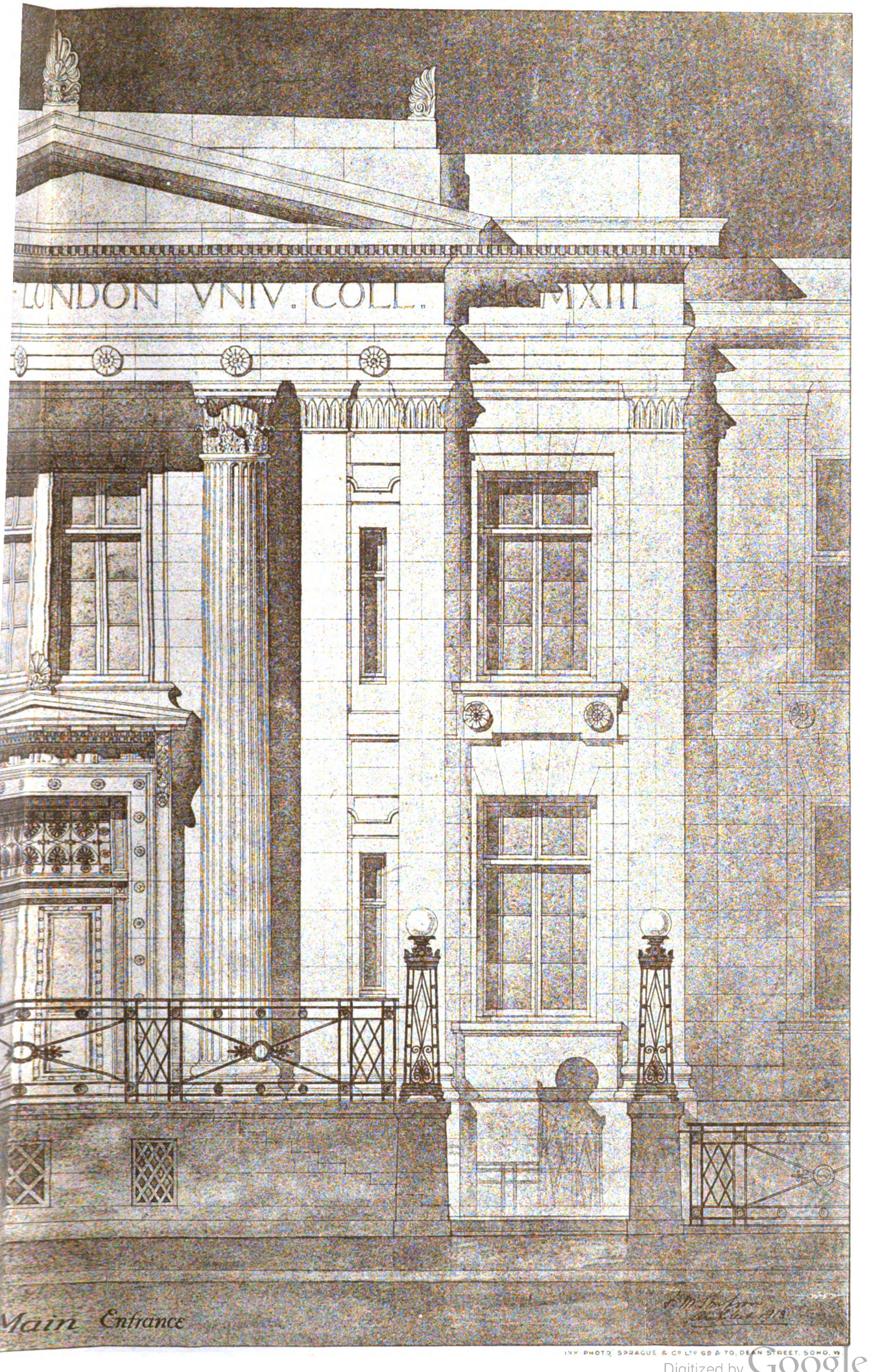
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Detail of

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Architect. Jan. 15th 1915.



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BUILDING: CENTRE OF GOWER PLACE FRONT

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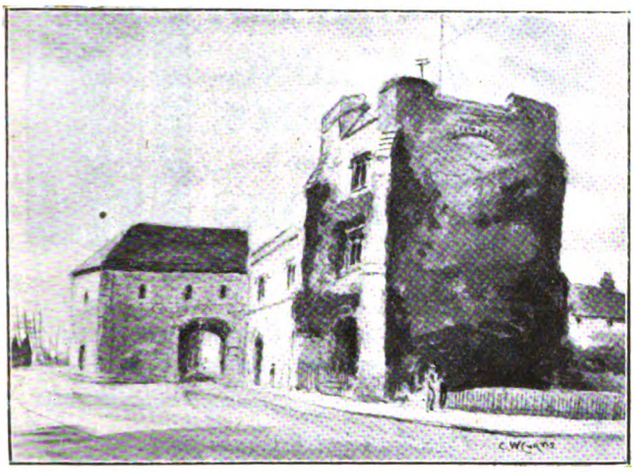
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raids, as was their wont, and the inhabitants seem ultimately to have assisted them, for at Southampton Canute was chosen King. This forceful character has left his mark upon the south coast. The famous story of our school books is referred to Southampton, the western shore enshrines his name, he was supposed to have had a residence at Bosham, east of Portsmouth, and his daughter is traditionally buried there.

It is supposed that the site of Saxon Southampton was the district of St. Mary's, and not within the walls of the mediæval town. Excavations in various parts of St. Mary's parish revealed coins ranging in date from the eighth to the eleventh century, and no coins of parallel date have been found in the area of the mediæval town with perhaps



SOUTH-EAST TOWER AND GATE.

one exception. The Danes made repeated attacks from 837 to 1009, and peace was only secured by Canute's kingship.

Edward Confessor landed at Southampton on returning from France to claim the throne on Canute's death in 1035, but returned to Normandy until seven years later, when his claim was acknowledged. The period of the Norman Conquest gave a great stimulus to building: the town walls were commenced and the castle built. Of the castle nothing remains but the site, but parts of Norman architecture are to be seen in the interior arches of the Bargate, in the crossing of St. Michael's Church, in some underground work, and in the Norman domestic building known traditionally, but without definite reason, as "King John's Palace." There is no evidence that this building was ever a palace, or that King John had any special connection with it, and the name appears to have been given by John Duthy in 1839, as a mere conjecture. Apart from this, the building has a special interest of its own as a very early example of domestic Norman architecture. Of such we have a few specimens in the country—the Jews' House at Lincoln, with its typical round-headed arch facing the High Street; a house at Minster in Thanet; Christchurch in Hampshire; and Boothby Pagnell in Lincolnshire. These belong to the latter half of the twelfth century, while the Southampton building belongs to the earlier half. It is probably, therefore, actually the earliest Norman dwelling house in the country. It is a plain, square, stone building of about 50 feet on one side and 30 feet on the other, including the wall. One enters a doorway in Blue Anchor Lane having a round-headed doorway with plain chamfer to the arch and jambs.

Mr. R. M. Lucas, F.R.I.B.A., thus describes the building: "The lower room, into which one descends by five steps from Blue Anchor Lane, is about 24 feet by 18 feet, the long sides running north and south. In the northern wall is the doorway, and in the western are chamfered jambs indicating two wide openings, which were filled in (probably during the fourteenth century) with masonry, in which two oillets are formed. The room is lofty, and the original timbers (two oak beams roughly chamfered, about 14 inches square, on which rest smaller joists of various shapes and dimensions) remain, carrying the floor above it. The walls are rather over 2 feet thick. The upper room is open to the roof, of which the construction shows a desire to obtain symmetry with somewhat inadequate means. Two windows in the west wall and one in the north light this room. They are of the same size, but not of precisely similar construction. Every one of the three windows is divided externally by a baluster shaft, with base and foliated capital, into a pair of narrow, round-headed openings, while on the inside of the wall the whole opening is spanned by one arch about 3½ feet wide."

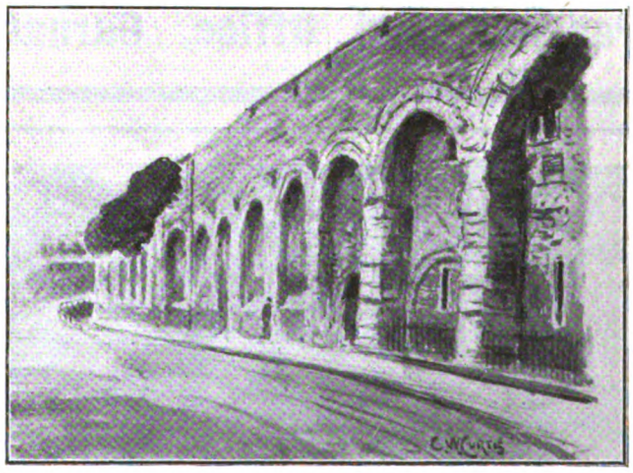
In 1124, Henry I. being King and Henry de Blois Bishop of the diocese, the Priory of St. Denis, with nine Augustinian black canons, was founded. To this priory Henry II. gave his four chapels, St. Michael, St. Cross (Holy Rood), St. Lawrence, and All Saints'. Of the Priory of St. Denis only a solitary fragment of grey wall remains. Here the remaining great conventual houses of Hampshire may be mentioned—Beaulieu, Netley, Romsey, Christchurch, Quarr, and Titchfield. The greater part of the churches of these confraternities exist, some entirely and used for services, others dismantled and roofless. Netley, in private possession and in urgent need of greater care, was a daughter house of Beaulieu, founded about 1231 by Bishop Peter des Roches. Its name is said to be Letley, derived from Laetus Locus (= beautiful spot).

In 1185 St. Julian's Hospital, God's House, was founded by Gervaise de Hampton and dedicated to God for the use of the poor. Edward III. gave the patronage and mastership to his Queen Philippa for her college at Oxford, and God's House still belongs to Queen's College. The hospital became very wealthy, and owned no less than 108 houses in the borough at the time of the French raid in 1338.

The Black Death came to Southampton in 1348. The town was nearly depopulated under its ravages, which are said to have deprived England of nine-tenths of its people. For ten years the customs were remitted to give opportunity for regaining prosperity. At this time the Preaching Friars were active in a material as well as a spiritual sense: they drained and purified the town, and it is said there are engineering works of theirs remaining to this day.

In 1346 no fewer than 1,600 ships are said to have sailed from Southampton with 32,000 troops, who fought victoriously at Crecy, the soldiers passing under the West Gate to embark. [In 1914 a far greater number embarked for the same battlefields in a smaller number of ships.] In 1539, in the Act for the dissolution of the monasteries, Southampton, Guildford, and the Isle of Wight were named as sees of suffragan bishops. Henry talked of founding twenty-three such: six only resulted. In 1556 Philip of Spain landed at Southampton with 160 sail. Here he stayed four days, attending Mass and drinking beer, while the Queen moved from Windsor to Winchester, where they were married.

In 1567 the Walloons, Celts of Flanders and the island of Walcheren, fled from the cruelties of the Spanish Inquisition in the Netherlands to Southampton. They desired that they might "live quietly and Christian-like," and



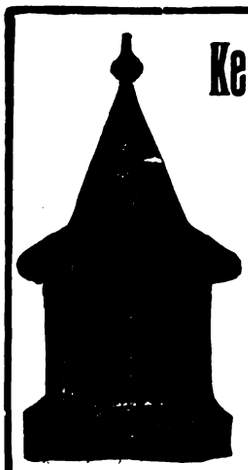
OLD TOWN WALLS ON WESTERN PARADE.

pursue their calling. "Lest, however, their coming should appear noisome and their occupation new and strange," they put their wishes in writing. They wished to have a church assigned to them in accordance with the doctrine of the Church of England, and asked for houses at a reasonable rent. Bishop Horne wrote to Cecil that they had undertaken that no corrupt religious acts or opinions shall be encouraged among them, and on his recommendation they were established in the chapel of God's House, with the sanction of Queen's College, Oxford. They were joined

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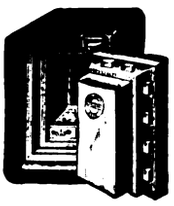
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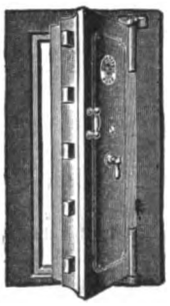
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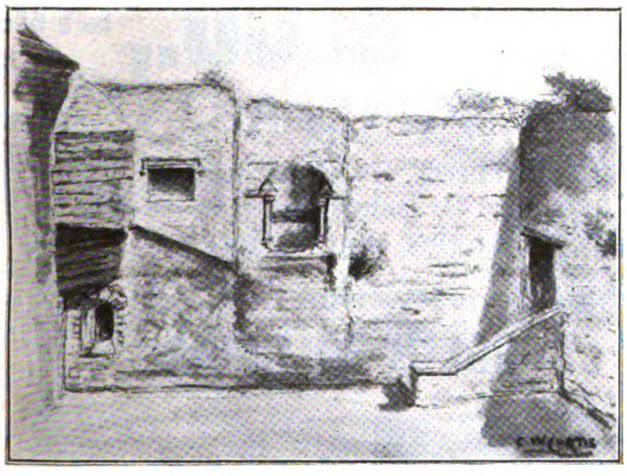
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by men of similar views from Northern France. For many years Presbyterian views prevailed among them, but from 1712 there was a desire to conform, and they are now ministered to by a priest of the English Church.

The year 1535 brings us to the time when the beautiful Tudor House was completed and occupied by Henry Huttoft. This citizen of Southampton was chief officer of the Customs, and the structure of the house shows that it served for the double purpose of dwelling and business premises. It is a very large building of four storeys, and the cellars are very extensive indeed. By the principal entrance access was immediately obtained to the Great Hall, having a length of 32 feet, but a partition has recently been erected to form a passage, thus obliterating the original plan. In the vaults Norman masonry may be seen, and, as Tudor House is adjacent to the Norman House, it has been suggested that the whole of the site was once covered by stone buildings of a pre-Norman and even pre-Saxon period.

Leland, Court Antiquary to King Henry VIII., remarks in his Itinerary that "there be many fair merchauntes houses in Hampton, but the chefest is the house that Huttoft, late custumer of Hampton builded in the west side of the town." Other four or five houses he mentions included one occupied by Guidote, an Italian. Now Huttoft was Mayor of the town in 1525 and 1534, and from the Burgesses' Book it appears that he conferred the dignity of burgess upon Anthony Guidotti, of Florence, without the consent of his brethren and contrary to the order of the town, and Guidotti was removed from the roll of burgesses in 1541. Guidotti was Huttoft's son-in-law, but a man of no principle; he absconded with money belonging to the King and to Huttoft. The story is a not uninteresting one, and occurs in the Letters and Papers of the Reign of Henry VIII., and is reproduced in the valuable account of Tudor House set forth by Professor Hearnshaw and Mr. R. Macdonald Lucas.

At the Revolution Southampton declared for the Parliament—after threats of bombardment, it is true. The Governor, Murford, set his chaplain to preach, and on the taking of the Solemn League and Covenant that "divine" thus prayed: "Bless the King, O Lord; mollify his hard heart, which delighteth in blood. Open his eyes, that he may see that the blood of his servants is dear in Thy sight." This pattern of Teutonic Protestantism domiciled in England no doubt emulated his "zealous brother in the ministry," who, when the organ and seats of Romsey Abbey and many other beautiful things were destroyed, got into the pulpit and for the space of two hours loudly applauded that *religious* act. Truly, we have had "frightfulness" in England ere this. At this time St. Michael's Church kept its regular Vicar during the first years of the Commonwealth, but a Presbyterian youth, Giles Say, was intruded, and in 1662 was rightly ejected.



NORMAN HOUSE.

The churches of Southampton are many, the majority, of course, being modern. The most beautiful is St. Michael's, standing in the centre of St. Michael's Square, seen at once from the High Street below Bar. Flanked on the south by the Tudor House, it presents a very vivid idea of the mediæval town. Its oldest part is the Norman base of the tower, a massive structure characteristic of the time, and yet without many counterparts among Norman remains in this country. But its heavy appearance is accentuated by the fact that it is enclosed in a parallelogram by the addition of chancel aisles and north and south aisles.



ST. MICHAEL'S CHURCH.

There was a time when some wooden buildings were attached to the church. These were set light to in the French raid of 1338, and fighting took place in the church itself, necessitating a Service of Reconciliation. The clock of St. Michael's set the time for the townspeople, and the bells of Holy Rood awakened them in the morning. The font of St. Michael's is one of a group of very similar appearance and construction, three of them found in Hampshire—at Winchester Cathedral, East Meon Church, and St. Michael's, Southampton. Others are to be seen in Lincoln Cathedral and at Ipswich. They are of black Tournai marble.

If St. Michael's Church is the most interesting, the mother-church, St. Mary's, is oldest in origin, although the present building is modern, the spire only just completed. It was designed by the late G. S. Street, and is a magnificent building. The first stone was laid by King Edward VII. when Prince of Wales.

Holy Rood was originally in the middle of the High Street, but was removed to its present site, given by Thomas de Bynedon, in the fourteenth century. The only portion of the old church is the tower, for the main body of the church was rebuilt in 1848. All Saints' Church is in the Classic style, built in 1795.

In the New Gallery, Shandwick Place, Edinburgh, there was opened on Monday last an interesting exhibition of facsimile reproductions of ancient Egyptian mural paintings, the proceeds from which will be wholly devoted to the Officers' Families Fund. The exhibition, which closes on the 16th inst., owes its initiative to the Rev. Colin Campbell, D.D., a well-known Egyptologist, who during several winters spent in the land of the Pharaohs had permission to trace in all their entirety a number of the mural paintings in old tomb-chapels at Thebes.

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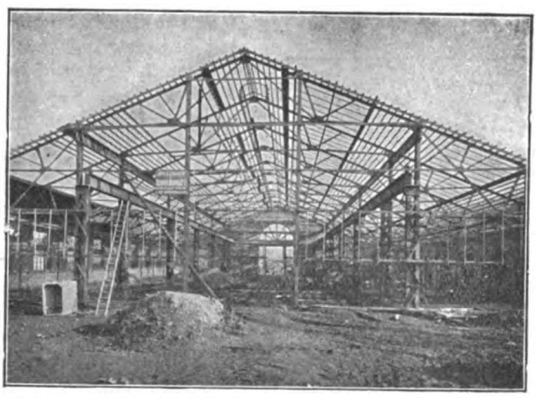
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BUILDING STONES: THEIR MICROSCOPICAL STRUCTURE AND FORMATION.

SECTION I.

Written and illustrated by James Scott.

IT appears to me that architects would derive an advantage if they habitually studied the microscopical structures of the various stones which they advise the builders to use. In this way they would become acquainted with the composition of these things, and learn the reasons why some erections can almost indefinitely withstand weathering and similar influences, while others slowly crumble. Such knowledge could be increased by testing the sections in a chemical direction. The effects produced by climatic operations are really of a chemical character, the consideration of which



No. 1.—A view of Darley Dale stone, magnified through a space equal to a pinhole—about $\frac{1}{4}$th-inch diameter.

is as important as testing for stress and strain and kindred qualities.

It is not an easy matter to find a stone that possesses all the merits which are needed in a building stone of any value. Unless the stone is readily accessible and cheap, other points in its favour will be at once discounted. It must be tough, yet easy to cut; it must be strong enough not to split on account of the superstructure it may be called upon to carry; it must resist the changes of weather and be impervious to moisture; and it must be pleasing to the eye. When we come to examine the available stones we fail to discover many possessing all these merits.

The continuous, systematic microscopical observation on stones would bring an intimacy with the science of petrology, which is also called petrography and lithology—a most interesting one, leading to the study of geology and mineralogy. Indeed, I should say that the *perfect* architect would be he who understood these overlapping branches of knowledge. It is remarkable how, when one learns something about one thing, there is a strong desire to pass to a connecting science, so that eventually a whole range of subjects is embraced. The initial or intuitive skill of designing would be strengthened by the acquisition of details bearing upon the materials used in erections.

You may meet with stones that have a very nice texture and tint at first, but which gradually exhibit irregular patches of discolouration. This behaviour is due to the fact that throughout the stone there happens to be a fine network, or connection, of softer grains, among which capillary action goes on, and smoky rain, or soil dampness, is unduly absorbed. In some cases there may be an actual chemical affinity, or attraction, between the linked-together particles of the stone and certain ingredients of the atmosphere. It is possible, of course, to meet with examples in which the natural inherent tendency to variegation exists, the native rock probably undergoing such changes simultaneously with the detached pieces which constituted the building, or portions thereof.

There is an immense diversity of stones—and of course the rocks whence they are quarried. Broadly speaking, they are divisible into three groups, depending on the manner of their formation—viz., igneous, sedimentary, and metamorphic. The igneous rocks are those which were once in a molten state—e.g., granites and basalts. The sedimentary rocks are those which have been formed by the gradual deposition of calcareous and kindred remains of animals in water, and by muds and sands—e.g., conglomerates and grits. The metamorphic rocks are those which contain features resembling both of the others, but are due to changes, amalgamations, and so on—e.g., schists and gneisses. It is quite impossible, in the space available to me, to adequately describe the exact properties of all these formations. Briefly speaking, igneous rocks have been caused by volcanic action; sedimentary rocks by oozes in oceans and lakes; and metamorphic rocks by a later mixture of both these productions.

A molten rock may undergo cooling and pressing for ages, minutely crystallising meantime, and then be cast up by earthquake agency and crumbled to dust by exposure. These remains, upon being washed by rains into waterways, eventually mix with the sediments or oozes of river and sea beds, and so help to form metamorphic rocks.

There are so many technical names for stones and their parent rocks that it is impossible to describe them all. I must reluctantly confine myself, principally, to the half-dozen definitely formed stones illustrated.

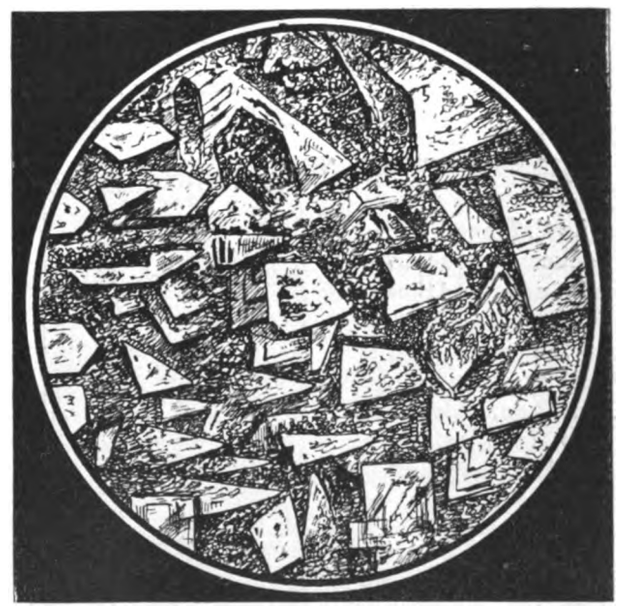
Among those stones which have not proved of any particular worth in buildings, after thorough testing, are basalt, diorite, dolorite, and serpentine, whereas the following are included in the group of highly serviceable kinds: granites, sandstones, many limestones, magnesian limestones, and similar formations.

Clays, shales, and the granular or chalky limestones have to be excluded from the list of suitable stones.

The granites, although so various in general texture and colour, always consist of masses of microscopical crystals (or pieces of the same) cemented together in an insoluble matrix of a siliceous nature.

Sandstones are composed of tiny grains of sand or quartz united by a similar bond of silica. These differ to a great extent, the evenly ferruginous, or iron-stained, ones being especially good. Calcareous sandstone—*i.e.*, containing lime—belongs to the same category of excellence.

Rejections in this class include the sandstones impregnated with pyrites (sulphide of iron) and with other iron combinations. These are very apt to discolour when in position. The colours of ferruginous, or iron-stained, sand-



No. 2.—A thin section of granite magnified in the space of a pinhole. From Mourne Mountain, Ireland.

stones pass from deep yellow, through brown, to red. Calcareous, or limy, sandstones are much too soft for building purposes, and are generally burnt for the manufacture of lime. The grey, argillaceous, or clayey sandstones, too, are not sufficiently hard for inclusion in erections. Pure sandstones, firm and unyielding, range from white to pale yellow.

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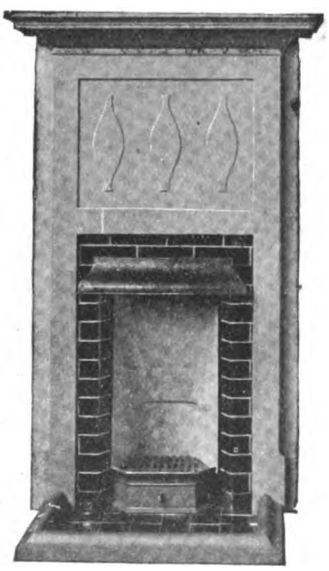
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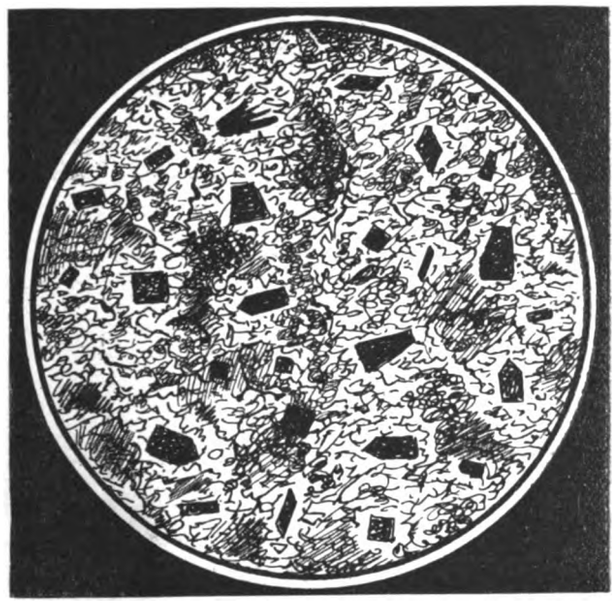
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The famous Darley Dale stone is a good example of grit, or metamorphic stone, and needs no advertising by me. The proprietors of the quarry whence it is obtained kindly sent me a sample of it for examination. It is a pleasantly drab-tinted stone, a microscopical surface view of which is given in No. 1. Its minutely sparkling effect is due principally to the presence of spangles of mica, but there are many other minerals which help to produce its close-grained texture. The unique effect of its surface is due to the neatly mixed assortment of crystals and amorphous matter, the tints, lights, and shades being well blended.

An attractive specimen of grey granite is that shown in No. 2, obtained from Mourne Mountain, Ireland. The paler parts are quite transparent, and when light is allowed to pass up through this slice of stone the greyness is seen to be occasioned by myriads of infinitesimally minute specks



No. 3.—A thin section of avanturine magnified in the space of a pinhole

of matter which, although obviously separate, still help to hold the overlapping crystals together.

In this connection it is worth recording that it is possible to pick away the crystals and other particles of a hard stone by means of a needle point, and when the action is observed during magnification it makes the material look very friable. It does not necessarily follow, of course, that the stones would crumble in this way. Indeed, in hot weather it is quite possible that many of the particles would get softened and help to block up little pores which would otherwise let in the moisture. But at present I am not discussing this problem. Avanturin is used principally for the ornamental parts of buildings. In general appearance it presents a coppery lustre, due to patches of indefinite red particles, and crystalline plates of browned or blacked mica, and when viewed microscopically is like the section shown in No. 3. It is often harder than steel. The best kind emanates from the Ural Mountains, Russia, but India possesses a green variety of the stone. In the Museum of Practical Geology, London, is a vase 4 feet high sculptured from a single block of this remarkable substance.

All the illustrations have been drawn to the same scale of magnification, each circle representing an original space only $\frac{1}{21\frac{1}{2}}$-inch in diameter.

SECTION 2.

Limestones have proved of very great utility for building purposes, but in choosing them a great amount of discrimination needs to be exercised. Broadly speaking, they are composed of calcium in various combinations, principally as a carbonate—*i.e.*, carbon dioxide and lime. By the way, it may be pointed out that when crushed they are serviceable to the mineral water manufacturer, because of the fact just mentioned. Upon submitting any form of limestone—marble, chalk, &c.—to the action of an acid brisk effervescence ensues, and the gas named is at once liberated. This gas is variously called carbonic acid, carbonic anhydride, carbon dioxide, CO_2, and is that with which aërated waters are impregnated. This extreme liability to disintegrate when in contact with acids has a direct bearing on the stones when regarded from the point of view of the architect and builder.

The rains of towns and cities are frequently rich with gases derived from the decomposition of smoke, and, when the stones are continually drenched, are caused to percolate through them and dissolve out particles of lime, to the detriment of the whole structure. They are apt to crumble to pieces if continually exposed to the action of rain when it contains a large percentage of carbonic acid gas.

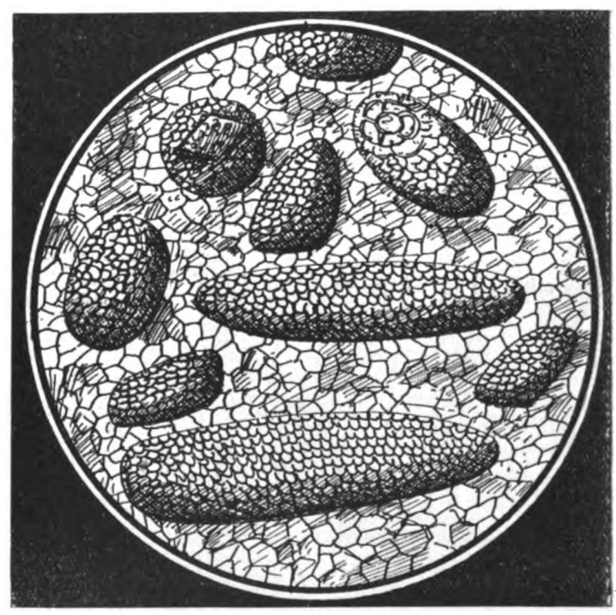
Limestones are seldom quite pure, among the chief defects being silica in the form of quartz, flint, and chert. In other stones silica is regarded as a meritorious ingredient, but in limestones its particles are apt to get loosened, and by constant friction against the soft calcium gradually wear the stone into a porous condition. A sandstone is practically all silica, but that is far different from a soft stone containing scattered specks of silica. The one is densely compact, the other more friable in consequence. A coat of armour would be durable, whereas a cloth coat containing a lot of tintacks would soon be ruined.

Some limestones weather admirably, but others disintegrate more rapidly than is good for the building of which they constitute a part.

There are so many limestones that it has been found necessary to name them after the abundance of the fossil remains which they contain. I cannot go into the details of this nomenclature, nor would it be of much use if I did so.

Limestones are often stained by iron oxide (rust is the familiar form of this substance), and by admixtures of a bituminous or asphaltic nature. Occasionally clay combines with the stone, thus constituting a marl, which is practically useless to the builder.

Two very different kinds of structure can be found in limestones. First we have the crystalline, or strictly mineral, formation, and then the organic. These definitions need a few words of explanation, so that there shall be no confusion in connection with any of them. Mineral substances comprise a large proportion of the anatomy, &c., of most living creatures, but in these cases they are referred to as organic in source because they have been associated with organisms. Fundamentally, however, one cannot distinguish much chemical contrast between the two kinds as found in rocks. In life the organic particles are compounded with gelatinous or



No. 4.—A thin section of Durham dolomite (magnesian limestone) magnified in the space of a pinhole.

slimy matters, but this is soon decomposed and washed away from the defunct creatures. Sometimes, however, certain ingredients may remain, and by becoming distilled settle as oily substance possessing a kerosene odour. But this would in due time evaporate. Its tendency is to harden the limestone.

With regard to shaping, however, there certainly can be detected many points of variance when the microscope is used in their investigation.

The crystalline limestones disclose, as their name implies, a mass of tiny crystals, whereas the organic limestones consist mainly of shells, corals, crinoids, bones, and kindred

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calcareous fossils. Now it is a very curious fact that the organic calcium may become partly or wholly crystallised, but there nearly always remain sufficient details for their proper classification to be made.

The limestones are generally pale yellow in tint. The thickest beds or deposits are found in Yorkshire and Durham, and it was from the latter county that I obtained the sample of which a section is depicted in No. 4.

Bath stone and Portland stone are limestones.

Some limestones contain magnesia as well, and if the quantity of this material is at all noticeable the substance is referred to as magnesian, or magnesium, limestone. A prominent member of this class is called Dolomite, because of the large percentage of carbonate of magnesia which it contains. A section is depicted in No. 4.

It appears to be full of gas spaces covered in by smaller granules than those found in between them. It is a debatable point whether these parts have once been occupied by minute fossils, or pieces of the same, which were afterwards soaked out from them, leaving casts behind, or are simply cavities due to chemical reactions. The former view appears to be the most feasible. Seeing that one may completely alter the formation of a section by means of acids, alkalies, and so on, we cannot be quite sure on any of these subjects.

Dolomitic limestone is often met with in aggregated masses about the size of cannon shot.

It should be understood that the microscopical views of a stone are very similar to one another in whatever direction they may be cut. The manner in which the various items are mixed together is often very curious and striking. With regard to the crystalline structures, the crystals often blend one into another so beautifully that no distinguishing junctions are left. They cross over each other so as to produce a great variety of patterns, and in many cases appear like pretty miniature mosaics. No. 5 gives a very good idea of the formation of the best kinds.

A stone of very elegant internal design is that called Permian Breccia, a slice of which is shown magnified in No. 6. The name Permia is derived from Perm, Russia, and has a bearing on the geological style and disposal, &c.,

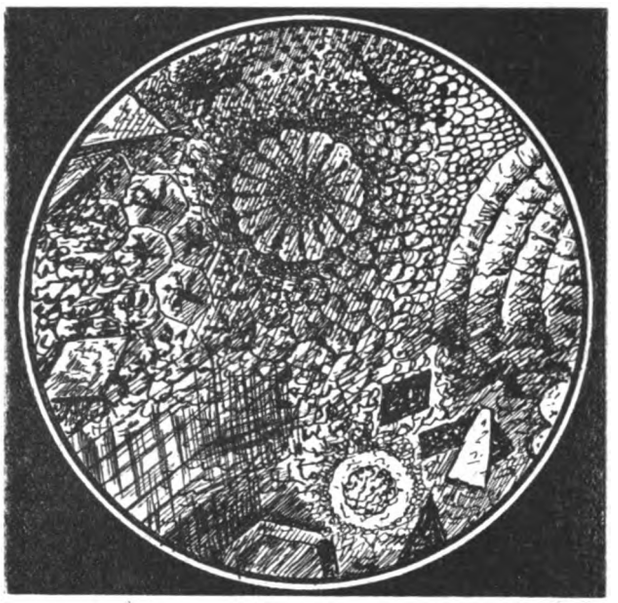


No. 5.—A thin section of limestone from Llandovery magnified in the space of a pinhole.

of the beds composing that particular formation. Permian rocks exist in Great Britain. The Breccias are found to be minutely fractured, thereby producing a somewhat granular effect. Many minute fossils can be found, some of which are depicted in the illustration. Their actual sizes can be gathered by bearing in mind the diameter of the circle before magnification—viz., $\frac{1}{24}$ inch, or that of a mere pinhole.

The Breccias appear to have been produced principally by the grinding together of huge masses of igneous rocks, and the washing away and dispersal of the fragments among the organic ooze on the beds of oceans and lakes.

Some have been partly formed by means of hot molten lava entering seas and becoming split into angular scraps, which then subsided to the bottom and amalgamated with the corals, shells, and so forth, which were already in existence.



No. 6.—A thin section of Permian Breccia magnified in the space of a pinhole. From Alderbury, Salop.

Another method which produced them was the action of glaciers travelling slowly between rocks which they denuded, the minutiæ afterwards settling in the organic débris. Of course, subsequent drainage and hardening by pressure occurred.

It has been found preferable to lay building stones in their bedding planes. That is to say, if they are placed in a position corresponding with that in which they were quarried, they will serve their purpose much better than when they are irregularly fixed. This trait, no doubt, has something to do with the fact that they are generally formed layer upon layer, and are subjected to greater pressure in one direction than in another.

For the purposes of making the sections from which the drawings were produced, small pieces of the respective rocks were ground down until they were as thin as paper, and thus displayed their inner structure admirably.

TESTS OF BOND BETWEEN CONCRETE AND STEEL.*

(Continued from last week.)

(24) THE tests with plain round bars anchored by means of nuts and washers and with washers only showed that the entire bar must slip an appreciable amount before these forms of anchorage come into action. Anchorages of the dimensions used in these tests did not become effective until the bar had slipped an amount corresponding to the maximum bond resistance of plain bars. With further movement the apparent bond resistance was high, but was accompanied by excessive bearing stresses on the concrete.

(25) The load-slip relation for bars anchored by means of hooks and bends was not determined. The high resistance given in these tests was probably a result of the bearing stresses developed in the concrete ahead of the bends.

(26) Tests on specimens stored under different conditions indicate that concrete stored in damp sand may be expected to give about the same bond resistance and compressive resistance as that stored in water. Water-stored specimens gave values of maximum bond resistance higher in each instance than the air-stored specimens; the increase for water storage ranged from 10 to 45 per cent. The difference seemed to increase with age. The presence of water not only did not injure the bond for ages up to three years.

* **Abstract from Bulletin of the University of Illinois, U.S.A., on "Tests of Bond between Concrete and Steel." By Duff A. Abrams.**

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but it was an important factor in producing conditions which resulted in high bond resistances. However, it was found that specimens tested with the concrete in a saturated condition gave lower values for bond than those which had been allowed to dry out before testing. The bars in specimens which had been immersed in water as long as three and one-half years showed no signs of rust or other deterioration.

(27) Specimens made out-doors in freezing weather, where they probably froze and thawed several times during the period of setting and hardening, were almost devoid of bond strength.

(28) Pull-out tests made at early ages gave surprisingly high values of bond resistance. Plain bars embedded in 1-2-4 concrete and tested at two days did not show end slip of bar until a bond stress of 75 lb. per square inch was developed. Bond resistance increases most rapidly with age during the first month. The richer mixes show a more rapid increase than the leaner ones. The tests on concrete at ages of over one year showed that the bond resistance of specimens stored in a damp place may be expected ultimately to reach a value as much as twice that developed at 60 days.

(29) The load-slip relation of leaner and richer mixes was similar to that for 1-2-4 concrete. For a wide range of mixes the bond resistance was nearly proportional to the amount of cement used. This relation did not obtain in a mix from which the coarse aggregate had been omitted.

(30) When the application of load was continued over a considerable period of time, or when the load was released and reapplied, the usual relation of slip of bar to bond resistance was considerably modified. The few tests which were made indicate that the bond stress corresponding to beginning of slip is the highest stress which can be maintained permanently or be reapplied indefinitely without failure of bond. The effect of continued and repeated load, impact, &c., may well be the subject of further experimental study.

(31) Little difference was found in the pull-out tests whether the load was distributed over the entire face of the block or over a narrow ring at the centre of the block or around the edge of the face of the block.

(32) Specimens moulded in a horizontal position gave lower bond resistance than those moulded in a vertical position; when settlement of the bar with the settlement of the concrete was entirely prevented, the bond resistance was reduced to about 60 per cent. of that found for similar specimens which were moulded with the bars in a vertical position. Plain bars tested by being pulled in the same or the opposite direction from the settlement of the concrete during setting gave about the same bond resistance, but in the tests of certain deformed bars this was not true.

(33) The term "autogenous healing" is used to designate phenomena observed in pull-out tests and in compression tests of concrete cylinders in which the hardening of the concrete was interrupted by loading the specimen at early ages to its ultimate resistance. Up to an age of one year the bond resistance of specimens stored in damp sand was not affected by as many as four loadings at intervals during the period of storage up to the ultimate resistance. For specimens stored in air and tested in the same way, the bond resistance was less than for damp-sand storage, but the tests showed a steady increase in bond resistance with each loading up to three months. Specimens which had been stored in air for two months before the first test and in water thereafter showed a decrease in bond with each subsequent loading, although the bond resistance in the last test was fairly high. The presence of water apparently permits the continuation of the hydraulic action of the cement for several months after the mixing of the concrete.

(34) Bond resistance of plain bars is greatly increased if the concrete is caused to set under pressure. With a pressure of 100 lb. per square inch on the fresh concrete for five days after moulding, the maximum bond resistance was increased 92 per cent. over that of similar bars in concrete which had set without pressure. The greater density of the concrete and its more intimate contact with the bar seems to be responsible for the increased bond resistance. Light pressure gave an appreciable increase in bond resistance. With polished bars the effect of pressure was slight.

(35) As might have been expected, the compressive resistance of concrete setting under pressure was increased in much the same ratio as the bond resistance. At the age of eighty days the initial modulus of elasticity in compression for concrete which set under a pressure of 100 lb. per square inch was about 37 per cent. higher, and the compressive strength was increased by about 73 per cent. over that of concrete which had set without pressure. The density of the concrete, as determined by the unit weights, was increased about 4 per cent. by a pressure of 100 lb. per square inch on the fresh concrete. The increase in strength and density was relatively greater for the low than for the high pressures. A pressure continued for one day, or until the concrete had taken its final set and hardening had begun, seems to have produced the same effect in increasing the strength and elastic properties of the concrete as when the pressure was continued for a much longer period.

(36) Concrete cylinders tested in compression at age of eighty days after having been loaded to failure at seven days gave compression strengths nearly as high as those tested for the first time at the same age. Retests of cylinders which had set under pressure gave similar results.

(37) Beams of comparatively short span reinforced with bars of large size were used in order to develop high bond stresses and give bond failures. Most of the beams failed in bond; a few failed by a combination of bond and diagonal tension or by tension in the steel.

(38) The usual method of computing the bond stress in a reinforced concrete beam does not take account of all the phenomena of bond action. Slip of bar due to beam bond action and the presence of anti-stretch slip may be expected to greatly modify the distribution of bond stress over the length of the bar, and otherwise to affect resistance to beam bond stresses. However, the nominal values for bond resistance, computed by the usual formula, form a useful basis for comparison in beams in which the dimensions and general make-up are similar.

(39) Slip of bar was a phenomenon in all beam tests in which careful slip observations were made. These load-slip relations give important indications as to the bond stress developed at points along the length of the beam.

(40) Slip was first observed in the middle region of the span at loads producing a tensile stress in the steel of about 6,000 lb. per square inch. In this region the shear is zero, and hence beam bond action, as usually understood, is absent. As the load was increased, slip of bar progressed through the outer thirds towards the ends of the beam at a rate nearly proportional to the increase of load. After slip occurred at the ends, the outer thirds of the length of the bar moved towards the middle of the span relative to the adjacent concrete. Slip of bar was probably partly responsible for the opening of outer cracks, since slipping was observed in the outer thirds of the beams before the cracks became visible.

(To be concluded.)

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Amersham.—Proposed infectious diseases hospital.

Twelve workmen's cottages, Back Lane (£2,100). Mr. T. Thurlow, architect, 25 High Street, High Wycombe.

CHESHIRE

Birkenhead.—Workmen's dwellings, the Gilbrook Estate. Mr. T. T. Rees, F.R.I.B.A., architect, Hamilton Chambers, Hamilton Street.

Wilmslow.—Town Hall, corner of Swan and Grove Streets.

DERBYSHIRE.

Chesterfield.—Council school, Derby Road. Mr. P. B. Houfton, architect, Furnival Chambers, Market Square.

DEVON.

Bideford.—Children's homes, for B.G.

DURHAM.

Chester-le-Street.—Cottage homes, for B.G.

Darlington.—Council school, Hopetown.

Hetton-le-Hole.—House, Dorset Street, for Mr. Robbins.

Jarrow.—Police court and barracks, Clervaux Terrace.

Ryhope.—Council houses (£21,250), for Sunderland R.D.C.

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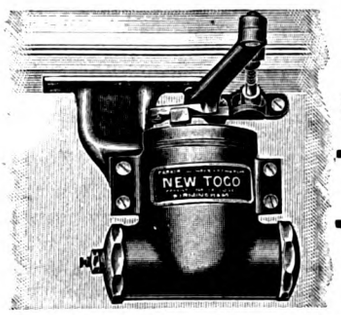
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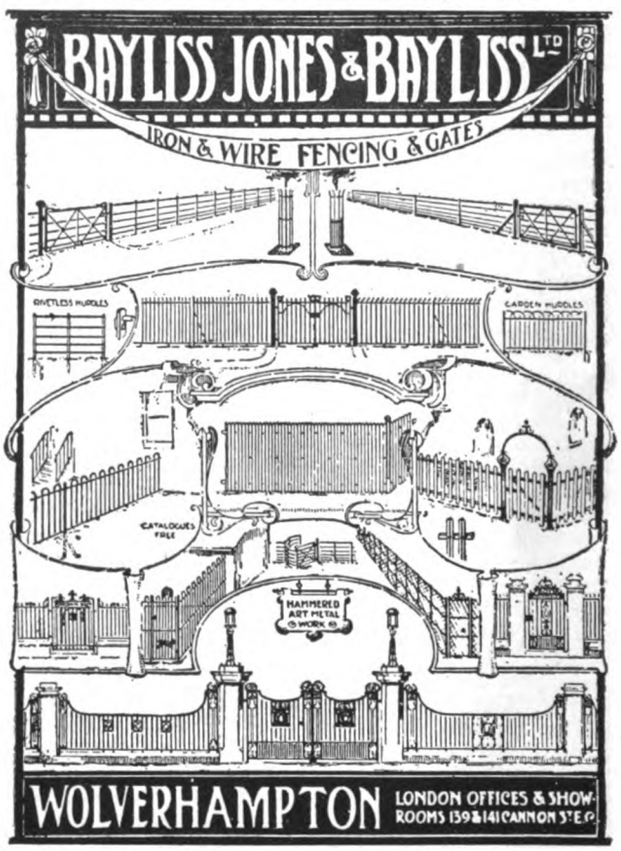
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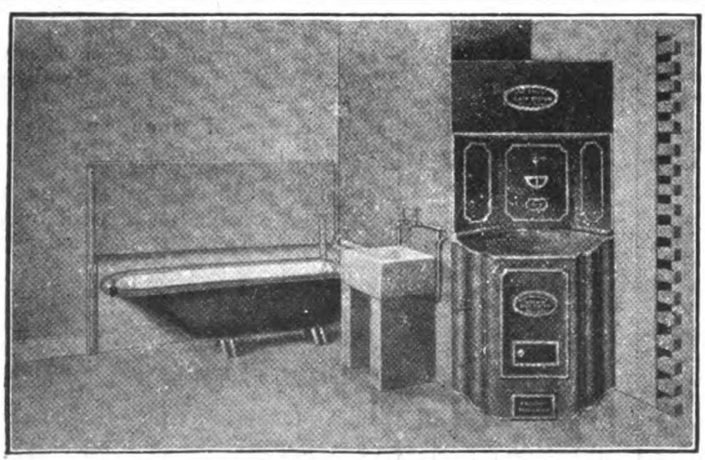
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ENGLAND—*continued.*

ESSEX.

Chadwell Heath.—Proposed girls' school, for Romford Education Committee.

Chelmsford.—Pair of houses, Rothesay Avenue. Mr. W. Fincham, builder, Baddow Road.

Pair of houses, Oaklands Estate, for Mr. S. Wortley.

House, off Roxwell Road, for Mr. L. P. Foreman.

Hornchurch.—Council school, Malvern Road, for Romford Education Committee.

Maldon.—Workmen's dwellings, Tolleshunt Major, for R.D.C. (£1,100).

GLOUCESTERSHIRE.

Bristol.—Cattle Market: reconstruction.

Colston's Girls' School: gymnasium, Cheltenham Lane.

HAMPSHIRE.

Southampton.—Boys' home. Mr. A. Gutteridge, architect, 9 Portland Street.

KENT.

Broadstairs.—House, Stone Road. Mr. E. E. Moodey, architect, Station Gates.

LANCASHIRE.

Bolton.—Council school, Devonshire Road. Mr. Campbell, architect.

Proposed Council school, Crescent Road, Great Lever.

Cadishead.—Infants' Council school.

Chorley.—Baths. Messrs. Woodhouse & Howard, architects.

Three houses, Devonshire Road. Mr. W. Hampson, builder, 81 Pall Mall.

Chorlton-cum-Hardy.—Proposed public baths, Manchester Road, for Manchester City Council.

Eccleston Green.—Cinema hall, for Messrs. Edward and Thomas Bretherton.

Irlam.—Technical school.

Lancaster.—Hippodrome: alterations.

Four houses, Sibsey Street, for Mr. R. L. Dilworth.

Sanatorium: extensions.

Liverpool.—Public elementary school (for 1,100 places), Stanley Park Avenue, Anfield.

Manchester.—Biscuit Works, Hazelbottom Road: addition.

"Clarence" Inn, 75 Cheetham Hill Road: conversion into shop and house.

Electricity sub-station, Greengate district, Salford (£18,300).

Central car depôt, Pendleton (£6,530), for Salford Tramways Department.

NORTHUMBERLAND.

Dinnington.—Sixty houses, for the Colliery Company.

Newcastle-on-Tyne.—Sixteen workmen's dwellings, St. Lawrence Square and Walker Road.

Tiptoe.—Farm steading and cottages. Mr. G. Reavell, jun., A.R.I.B.A., architect, Lloyd's Bank Chambers, Alnwick.

SOMERSET.

Puriton.—Police officer's house, for Somerset Standing Joint Committee.

Wellington.—Bank premises. Mr. C. H. Brodie, architect, 15 Bishopsgate, London, E.C.

STAFFORDSHIRE.

Hanley.—Church School: alterations, for Stoke-on-Trent Education Committee; also

Council school, Northwood.

Wednesbury.—Twenty-four workmen's houses, Hob's Hole Road. Messrs. Summerhill & Jellyman, contractors, Camp Street (£4,320).

West Bromwich.—Works, for Vibro-Concrete, Ltd. (£10,000).

Wolstanton.—Council offices. Mr. W. S. Slater, architect, Over House Chambers, Burslem.

SUSSEX.

Eastbourne.—Offices and shops, 42 and 44 Terminus Road, for Prudential Assurance Company.

Haywards Heath.—Post Office, Boltro Road. Mr. H. Finch, contractor, Steam Joinery Works.

Horsham.—Proposed isolation hospital.

WARWICKSHIRE.

Birmingham.—Council school, Burlington Street, Aston: alterations. City architect.

Nuneaton.—Bakehouse, Queen's Road: alteration, for Messrs. James Eadie, Ltd.

Six houses, Merevale Avenue. Mr. G. Cooper, builder, Midland Road; also

House, Broad Street.

Motor-house, Hill Top, Coventry Road, for Mr. F. P. Harper.

WILTSHIRE.

Salisbury.—Secondary school, Moberley and Victoria Roads.

WORCESTERSHIRE.

Stourbridge.—Bank premises and offices, High and Coventry Streets, for the London City and Midland Bank.

No. 66A High Street: alterations, for the United Counties Bank, Ltd.

Four houses, Heath Lane, for Mr. W. Drew.

House and shop, Coventry Street. Mr. A. Simmonds, builder, Pargeter Street.

YORKSHIRE.

Bradford.—District baths, Five Lane Ends, Idle (£9,800).

Brighouse.—The Rosemary Dyeworks: extensions and alterations.

Doncaster.—Tramcar shed (£1,850).

Huddersfield.—Twenty workmen's dwellings, High Royd, Mold Green.

Shelf.—Sanatorium: bungalow, for Halifax Town Council.

Sowerby Bridge.—House, Wharf Street, for Mr. W. H. Hall.

"Sportsman" Inn, Sowerby Street: conversion into three cottages.

WALES.

Birchgrove.—Stables and bakehouse, Heol Las, for Mr. H. Jones.

Cardiff.—Premises, St. Mary Street, for the Co-operative Wholesale Society, Ltd. (£85,000).

Gorseinon.—Fourteen houses, off Mason's Road, for Mr. Davies.

Gowerton.—Shop, Sterry Road: alterations, for Mr. T. Lewis.

Rhos.—Working-class houses for Wrexham R.D.C.

Swansea.—Isolation hospital, Hendrefoilan.

SCOTLAND.

Alloa.—Proposed Lambert Memorial Church, Gaberston, for the U.F.C. Presbytery of Stirling and Dunblane (£5,500).

Edinburgh.—St. John's Church, Princes Street: vestries.

Glasgow.—Seven tenements of houses, Beechwood Drive and Woodcroft Avenue. Mr. J. A. Mactaggart, builder, 65 Bath Street.

Machinery store, West Greenhill Place, for Mr. C. Henry.

Offices, North Queen Street, for N.B.R. Company.

Offices and warehouses, Scott Street, Port Dundas, for Messrs. Ferguson, Shaw & Sons.

Storey over yard, 36 Dobbie's Loan, for Mr. J. Cochrane.

Shops and Hall, King's Park and New Cathcart Roads, Mount Florida, for the Mount Florida Property Company.

Warehouse and shed, Craigmount Street, for Messrs. Shaw, Glasgow (Limited).

IRELAND.

Cookstown.—Proposed Technical School.

Dublin.—Proposed R.C. cathedral.

PATENT SPECIFICATIONS PUBLISHED JANUARY 7, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 11,448. Nov. 17, 1913.—Delzell Paton, 27A Yerbury Road, Holloway, N. Automatic sprinklers for fire extinguishing.

21,376. Sept. 22, 1913.—Louis Rasch, 17 Sunny Bank, South Norwood. Means for regulating the gas supply to gas fires; and 852, Jan. 12, 1914. Gas meters.

23,897. Oct. 22, 1913.—George Cooper, of the British Prometheus Co., Ltd., Salop Street Works, Highgate, Birmingham. Hot plates.

29,547. Dec. 22, 1913 (dated under International Convention July 14, 1913).—W. T. Cowperthwaite, Valley Road, Auckland, N.Z. Silent flushing cistern.

27,885. Dec. 4, 1913.—Martin Deacon and William Gore, St. Stephen's House, Westminster, S.W. Apparatus for filtering water and other liquids.

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28,081. Dec. 5, 1913.—F. G. Russell, 4 Rons Road, Newmarket, Cambridge; E. A. Russell, The Broadway, St. Ives, Huntingdon; and A. M. Phillips, of the Tutbury Engineering Co., Ltd., Tutbury, Staffs. Ridging machines or appliances.

29,161. Dec. 17, 1913.—J. P. Elliot, "Holmwood," Bellingham, Northumberland. Mixture or composition for applying to bright surfaces of metals to prevent rusting or oxidation.

274. Jan. 5, 1914.—Linley & Co., W. H. Owensmith, and Josiah Edwards, Bourne Works, 73-75 Great Sister Street, Birmingham. Generator for acetylene gas.

2,056. Jan. 26, 1914.—E. E. Barnett, 60 Haymarket; T. B. O'Brien, 27 Abchurch Lane, E.C. Device for preventing the rattling of windows and the like.

4,492. Feb. 21, 1914.—Thomas Grier, 16 Carrick Street, Glasgow. Generator for acetylene gas.

4,841. Feb. 25, 1914.—Harris & Sheldon, Ltd., Stafford Street, Birmingham, and H. E. Jones, 29 Persehouse Street, Walsall. Shelf and analogous brackets.

5,175. Feb. 28, 1914.—Ernest Clough, 41 Sprinkfield Road, Birkby, Huddersfield. Jointing ring for flanged pipes, cylinders, and the like.

5,251. March 2, 1914.—J. Tylor & Sons and S. A. Self, Belle Isle, York Road, N. Taps or valves.

6,056. March 10, 1914.—J. Tylor & Sons, Belle Isle, York Road, N., and T. H. Appleby, 52 Hillfield Avenue, Hornsey, N. Waste preventing taps or valves.

10,130. April 24, 1914.—J. M. Brothers, B.A. Cantab., Westfield, Prestwich, Lancs. Manufacture of plaster.

11,214. May 6, 1914 (dated under International Convention May 9, 1913).—G. A. Macbeth, Wabesh Building, Pittsburg, U.S.A. Manufacture of illuminated glass.

11,530. May 9, 1914 (dated under International Convention June 5, 1913).—Guido Presenti, 47 rue du Simplon, Paris. Hollow nail or wall plug.

14,662. June 18, 1914.—William Thompson, 20 Charlotte Street, South Shields. Door lock.

15,408. June 27, 1914.—Daniel Walter, Grosvenor House, New Church Road, Hove. Locking device for frames of casement stays and the like.

Any of the above specifications may be obtained from J. D. Roots & Co.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Whitby Abbey.

SIR,—The damage to Whitby Abbey caused by the bombardment of December 16 is described in the following report, which I am communicating to the Society of Antiquaries.

The west end of the nave has suffered most. This is the latest part of the church, dating from the early years of the fourteenth century, and its condition before the bombardment was as follows: The lower part of the west wall of the nave itself was standing up to the level of the sill of the great west window; the west doorway was complete, except its central column and part of its tympanum, and on each side of the doorway, on the inner side of the wall, was a wall-arcade of similar character to those of the nave aisles of York Minster and the west end of Howden Church. The western respond pier of the north arcade of the nave remained its full height, with its capitals and the springing of the arcade arch, and behind this was a newel-stair. The north jamb of the great west window remained its full height up to the springing, attached to the wall and buttress containing the stair. The west wall of the north aisle was fairly complete to its full height, except that the window had lost part of its tracery, which, like the great west window of the nave, was an insertion of the fifteenth century.

The arch of the west doorway and the walling above it have been destroyed. The wall-arcades on either side of the doorway have collapsed, leaving the rubble core of the wall—except a small fragment at each end, north and south. The north jamb of the great west window has fallen, with the whole of the eastern half of the stair, down to below the capitals of the respond pier. The south half of the inner arch of the west window of the north aisle has fallen, and what remained of its tracery has been dislocated. Much of the north face of the buttress in line with the west wall of the aisle has been stripped off.

Elsewhere the church has suffered some lesser injuries. The gable-end of the north transept is flanked by turrets rising from great buttresses; on the eastern of these the upper arcade has lost one of its arches and small gables, and one of the gables of the lower arcade has lost its apex stone; the wall around the eastern angle of the buttress at the latter level shows signs of having been struck, and some surface damage, and the blow seems to have brought down two arch stones from the north side of the bay of the east clear-storey of the transept next the crossing. One of the main piers of the north arcade of the choir, the fourth from the east end, has been struck, and the capitals of two of its shafts on its north-east side have been shattered. Otherwise the beautiful choir has fortunately almost entirely escaped injury.—Yours, &c.,

JOHN BILSON, F.S.A.,
Local Secretary for Yorkshire of the Society of Antiquaries.
Hull, January 7.

Belgian Chamber of Commerce in London.

SIR,—The Belgian Chamber of Commerce in London (Incorporated), 24 St. Dunstan's Buildings, St. Dunstan's Hill, E.C., appeals to the British manufacturers and merchants for support.

It has rendered valuable services since 1890 to industries and commerce between the two countries. Since the beginning of the war their task has become much more arduous through all the various questions due to the difficulties of trade.

After the cessation of hostilities they will have very important duties to perform in helping the commerce of the two countries, which are now bound up more than ever in ties of mutual trust and friendship, by bringing together manufacturers and buyers of goods and in many other ways. But they find great difficulties in carrying out their duties through lack of funds, as the call upon them has been greater than ever before, and their Belgian supporters are unable now to send their usual remittances.

Applications for membership and contributions should be sent to

Yours faithfully,
PAUL DORCHY,
The General Secretary, Belgian Chamber of Commerce in London (Incorporated).
24 St. Dunstan's Buildings, St. Dunstan's Hill, E.C., London.

Municipal Trading.

SIR,—Your "Note" in the current issue of your valued weekly, respecting the proposal of Edinburgh Corporation to seek powers to trade in electrical fittings, draws attention to a very reprehensible tendency in municipalities at the present day. The matter is one for condemnation from a higher standpoint than the mere architect's; it is one that affects the ratepayer *qua* ratepayer; and—in the present instance—it also adversely affects a well-deserving trade. But it is larger even than the effect upon any one trade, for the whole matter of municipal trading is initially wrong, except to the extent that the general public weal is concerned. Municipal trading saps the healthy spirit of competition, speculates in public money unjustifiably, having everything to win and not much to lose (when compared with private trading), and is an extension of the principle of centralisation, which is so utterly opposed to the present-day polity.—Faithfully yours, ARCHITECT.

Kensington, January 1915.

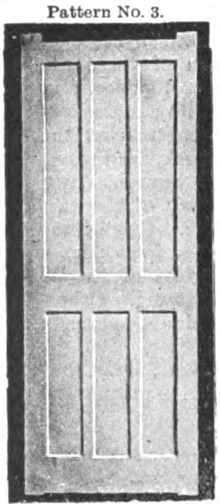
Westminster Cathedral

SIR,—The first paragraph in your Notes and Comments last week is an interesting description of the beautiful work which is gradually being installed. Might I respectfully draw the attention of the cathedral authorities and the architects to the fact that we have in this country beautiful marbles and decorative stones, and that they might surely give preference to British materials, for a British building, whether it be known as Roman Catholic, Church of England or any other sect? I have quite recently had my attention called to some delightful examples of pure white marble, also some of a creamy nature, a British production from British quarries; also a delightful pale green and a Welsh stone of various colours and granite nature which for decorative effect cannot, I am sure, be surpassed.—I am, your obedient servant, BRITISHER.

London, W.C., January 10, 1915.

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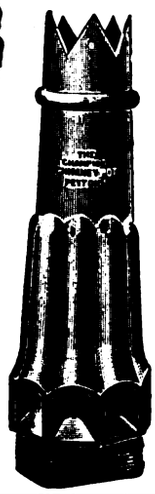
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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 15, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive sketch plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

DONCASTER.—Jan. 23.—The Town Council invite architects to submit designs for the laying out of a site of about twenty acres at Carr House, Doncaster, and the erection of 102 workmen's dwellings on four acres thereof on Garden City lines. Copies of the particulars and conditions of the competition may be obtained at the office of Mr. R. A. H. Tovey, Town Clerk, Doncaster.

LIVERPOOL.—Feb. 8.—The Corporation invite designs for workmen's dwellings, to accommodate about 500 persons, and proposed to be erected on the site known as the Rathbone Street area. Premiums of £100, £50 and £25 respectively are offered for the first three selected designs, and the Council have appointed Mr. Henry Hartley, F.R.I.B.A., as assessor. The first premiated design will become the property of the Corporation. A plan of site, together with a copy of the printed conditions and instructions, will be forwarded to the applicant on payment of a deposit of £1 1*s.*, which will be returned on the receipt of a bona-fide set of drawings. Mr. E. R. Pickmere, town clerk, Municipal Offices, Liverpool.

MACCLESFIELD.—Jan. 31.—The Lands and Town Development Committee invite competitive plans, &c., for a housing scheme from the local architects and builders. Plans, specification, and estimate must be deposited not later than January 31, 1915, marked on the outside cover, "Housing Scheme." Mr. S. C. Baggott, Borough Surveyor, Macclesfield.

CONTRACTS OPEN.

ANGMERING.—Jan. 25.—For erection of four cottages at Angmering, Sussex, for the East Preston Rural District Council. Mr. A. Shelley, clerk, Town Offices, Littlehampton.

ASTON-BY-STONE.—Jan. 26.—For erection of a farm institute at Aston-by-Stone, comprising model farm, dairy, hostel, principal's house and cottages, for the Staffordshire Education Committee. Send applications and £2 2*s.* deposit by Jan. 26 to Mr. Graham Balfour, director of education, Stafford.

BACUP.—Jan. 23.—For erecting a propagating house, and also for alterations to certain buildings to form pavilions at the Moorlands and Stubbylee Park for the Corporation. The Borough Engineer's Office, Bacup, Lancs.

BISHOPSTOKE.—Jan. 19.—For erection of offices for 305 children on the site for Bishopstoke new Council school, for the Hampshire County Council. Deposit 10*s.* 6*d.* Mr. A. L. Roberts, architect to the Education Committee, The Castle, Winchester.

BRISTOL.—Jan. 18.—For plastering, painting, &c., ward 162 and staircase, bathrooms, &c., adjoining, at the Eastville institution, for the Guardians. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

BURY.—Jan. 30.—For construction of an extension to reinforced concrete retaining wall at the electricity generating station, Chamber Hall, for the Corporation. Deposit £2. Mr. J. A. Settle, A.M.I.C.E., borough engineer, Bank Street, Bury, Lancs.

BUXTON.—For the rebuilding of Devonshire Laundry, Bridge Street, for Messrs. Oram. Messrs. Garlick & Son, architects, Quadrant, Buxton.

COLCHESTER.—Jan. 20.—For erection of tuberculosis pavilion, scarlet-fever ward, and alterations and additions to the administration block at the Infectious Diseases Hospital, Mile End, for the Borough and Port Health Committee. Mr. H. Collins, A.M.I.C.E., borough engineer and surveyor, Colchester.

DARWEN.—Jan. 20. For erection of proposed baths, Railway Road, for the Health Committee. Separate tenders may be submitted for general builders' work, plastering, painting, slating, plumbing and glazing. Mr. R. W. Smith Saville, C.E., borough surveyor, Darwen.

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DEWSBURY.—Jan. 18.—For the various works required in extension of weaving shed at Spinkwell Mills. Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects and surveyors, Market Place, Dewsbury.

DEWSBURY.—Jan. 18.—For mason work required in altering the Eastborough Working Men's Club. The steward or Mr. G. Asquith, secretary.

FLEETWOOD.—Jan. 20.—For roofing over the extension of fish stage at the new fish dock, Fleetwood, for the Lancashire and Yorkshire Railway. The Engineer's Office, Hunt's Bank, Manchester.

GARFORTH.—Jan. 20.—For certain additions to the educational buildings at the Manor Farm, Garforth, for the Yorkshire Council for Agricultural Education. Deposit 10*s.* 6*d.* Mr. B. B. Stamford, architect, County Hall, Beverley.

HEBBURN.—Jan. 25.—For erection of thirteen four-roomed self-contained houses in Tweed Street, for Palmers Housing Company, Ltd. Mr. T. W. Barrett, 6 Argyle Street, Hebburn.

ILFORD.—Jan. 22.—For extension of Ilford Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Postmaster, Ilford, and H.M. Office of Works, Storey's Gate, London, S.W.

IRELAND.—Jan. 19.—For erecting new cooking kitchen and stores at infirmary (works No. 2, class C), for the Belfast Guardians (Messrs. Young & Mackenzie, architects and engineers, Belfast). Deposit £1 1*s.* Messrs. M'Carthy & Brookes, surveyors, Scottish Provident Buildings, Belfast.

IRELAND.—Jan. 28.—For the erection and furnishing of National School buildings at Foilogohig (near Banteer), Co. Cork. The District Office of Works, Cork, and Mallow Post Office.

IRELAND.—Feb. 1.—For erection of a central dispensary under the Tuberculosis Act (1908) on the grounds of the County Infirmary, Tullamore, for the King's County Hospital and Dispensaries Committee. The County Surveyor's Office, Court House, Tullamore.

KNUTSFORD.—Feb. 3.—For erection of small operating theatre and other small alterations to the Knutsford institution at Knutsford, Cheshire, for the Bucklow Board of Guardians. Send applications and £1 1*s.* deposit by Jan. 19 to Mr. H. H. Brown, F.R.I.B.A., architect, 20 Brazennose Street, Manchester.

LIVERPOOL.—Jan. 19.—For clearing the site and putting in the foundations, &c., in connection with the erection of a parcel office, Hatton Garden, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Assistant Architect, H.M. Office of Works, Bank Buildings, Derby Square, James Street, Liverpool, and H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—Jan. 19.—For erection of a sorting office at Herne Hill, S.E., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* Mr. E. Cropper, H.M. Office of Works, 22 Carlisle Place, Westminster, S.W.

LONDON.—Jan. 26.—For construction of an engine house, including the foundations for gas engines and pumps, the construction of culverts and connecting chambers, suction and delivery pipes, &c., and other works on the south side of the present engine house, at the Council's Isle of Dogs Pumping Station, situated on the east side of Stewart Street, in the borough of Poplar, for the London County Council. Deposit £5. The Council's Chief Engineer at the County Hall, Spring Gardens, S.W.

LUDLOW.—Jan. 26.—For erection of twenty-two cottages under the Housing, Town Planning, &c., Act, 1909, on land in Holdgate Fee, for the Town Council. Deposit £2 2*s.* Mr. J. Butters, architect, Ludlow.

MANCHESTER.—Jan. 20.—For erection of a washhouse at Leaf Street Baths, for the Corporation. Deposit £1. The City Architect, Town Hall, Manchester.

MANCHESTER.—Jan. 20.—For the execution of general contractors' and plumbers' work that may be required in connection with the drainage of houses and other premises for a period of twelve months ending March 31, 1915. Deposit £1 1*s.* Mr. H. Prescott, manager of the Drainage Department, Manchester.

MARTON.—Jan. 23.—For (1) erection of two pairs of cottages at Marton, (2) repairs to the farmhouse at Marton, near Rugby, for the Warwickshire Education Committee. The County Education Office, Northgate Street, Warwick.

NEWCASTLE-UPON-TYNE.—Jan. 22.—For alterations and additions to the labour exchange, Heaton, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Manager, Labour Exchange, Heaton Road, Heaton, and H.M. Office of Works, &c., Storey's Gate, S.W.

PORTSMOUTH.—Feb. 4.—For carrying out of extensions to the infectious diseases hospital at Milton, comprising the addition of three new wings, a nurses' block, extension of laundry, mortuary, &c., for the Town Council. Deposit £3 3*s.* The Borough Engineer, Town Hall, Portsmouth.

ROCHDALE.—Jan. 27.—For erection and completion of repair shops in Mellor Street in the following trades, for the Tramways Committee: (*a*) reinforced concrete foundations and car platform; (*b*) steelwork (steel frame); (*c*) builders' work. Mr. P. W. Hathaway, A.R.I.B.A., Town Hall, Rochdale.

ST. HELENS.—Feb. 23.—For erection of a refuse destructor, together with all contingent works, at the Parr Depôt, within the borough. Deposit £2. Mr. A. W. Bradley, M.Inst.C.E., borough engineer, Town Hall, St. Helens.

SCOTLAND.—Jan. 20.—For the following works in connection with alterations to be carried out at No. 43 Lauriston Place—viz.: (1) Mason work, (2) joiner work, (3) plumber work, (4) plaster work, for the Edinburgh School Board. The School Board Offices, Castle Terrace, Edinburgh.

SCOTLAND.—Jan. 26.—For mason, concrete, and brick work, carpenter and joiner work, plumber and slater work, steel and iron work, cement and rough casting, and painter work of buildings proposed to be erected at Greenhead Filters, for the Irvine and District Water Board. Deposit £1. Mr. H. Thomson, architect, Saltcoats.

SCOTLAND.—Jan. 27.—For the following work required in connection with the reconstruction and extension of Couper Institute, Cathcart, for the Glasgow Corporation—viz.: (1) Digger, mason, brick, and steel works; (2) carpenter, joiner, glazier, ironmonger, and iron-roofing works; (3) plumber work; (4) lath and plaster works; (5) slater work; and (6) tile work. The Office of Public Works, 64 Cochrane Street, Glasgow.

SEATON DELAVAL.—Jan. 28.—For erection of a police station, for the Northumberland Standing Joint Committee. Deposit £2. Mr. J. A. Bean, county surveyor, Moothall, Newcastle-on-Tyne.

SLAITHWAITE.—Jan. 22.—The West Riding Education Committee invite whole or separate tenders for the following works at the Slaithwaite Mechanics' Institute: fitting up as special subjects' centre (builder, joiner, plumber and painter). The Education Architect, County Hall, Wakefield. Send £1 deposit by separate letter to the West Riding Treasurer, County Hall, Wakefield.

SUMMERSEAT (LANCS.).—Jan. 20.—For works required in alterations and additions at the Summerseat House municipal special school, Summerseat, near Bury, for the Manchester Education Committee, each section to be let separately as follows: (1) excavator, drainer, concretor, and bricklayer; (2) stonemason; (3) slater; (4) carpenter and joiner; (5) supply of cast-iron work; (6) plumber and glazier; (7) plasterer and painter. Deposit £1 1*s.* Education Offices, Deansgate, Manchester.

TOWCESTER.—Jan. 27. For erection of refreshment rooms at Towcester, for the Stratford-upon-Avon and Midland Junction Railway Co. Deposit 10*s.* 6*d.* Messrs. Knight & Hebery, architects, 5 Rother Street, Stratford-on-Avon.

UPHOLLAND.—Jan. 30.—For erection of eight workmen's dwellings, for the Upholland Urban District Council. Deposit £1 1*s.* Mr. A. Hunt, surveyor, Council Offices, Upholland, Lancs.

WALES.—The Breconshire County Council invite tenders for the following works—viz.: Builth Bridge, widening, &c. (*a*) widening in stone and ferro-concrete, and (*b*) widening entirely in stone; Saleyard Bridge (near Gilwern), improvement, new bridge and road diversion; Clydach Bridge (near Brynmawr), widening. Mr. C. W. Best, M.I.C.E., county surveyor, County Hall, Brecon.

WALES.—Jan. 20.—For erection of two shops and alterations to an existing shop at Abertridwr, for Mr. F. Hawkins, Pontypridd. Deposit £1 1*s.* Messrs. A. O. Evans, Williams & Evans, architects, Pontypridd.

WARRINGTON.—Jan. 19.—For the supply and erection of six cast-iron ornamental tramway shelters at the various tramway termini, for the Electricity and Tramway Committee. The Borough Surveyor, Town Hall, Warrington.

WEYMOUTH.—Jan. 25.—For extension of Weymouth Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Postmaster, Weymouth, and H.M. Office of Works, &c., Storey's Gate, S.W

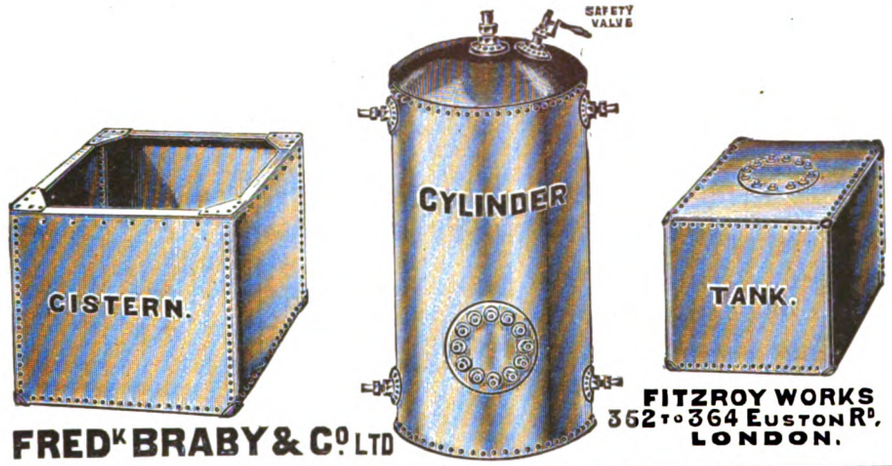
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TENDERS.

BRANCASTER.

For the erection of six dwellings for the working classes at Brancaster, Norfolk, for the Docking Rural District Council.

Southgate	£1,087	0	0
REUBEN SHANKS, Hunstanton and Chatteris (*accepted*)	897	0	0

BROMPTON.

For the erection of a block of dwellings in Middle Street, for the Gillingham Town Council. Mr. J. L. REDFERN, borough surveyor, Gillingham, Kent.

Saunders & Co.	£1,633	4	6
Gates & Sons	1,475	0	0
West Bros.	1,347	0	0
Phillips	1,297	0	0
C. E. SKINNER & SON, Chatham (*accepted*)	1,189	0	0

CROSBY.

For the erection of a Council school, for the Lindsey County Council Education Committee. Messrs. SCORER & GAMBLE, architects, Lincoln.

Holmes & Son	£12,800	0	0
Pallister	10,875	0	0
Pumfrey	10,749	0	0
S. & R. Horton & Sons	10,678	0	0
Thornhill Bros.	10,512	0	0
J. Jarvis & Sons	10,440	0	0
Kettlewell	10,393	0	0
Thompson	9,995	0	0
Wright & Son	9,948	0	0
Lombard, Rogers & Crooks	9,857	0	0
Gilbert & Hall	9,760	0	0
T. Fish & Sons	9,136	0	0

GRIMSBY.

For the erection of extensions and additions to the Workhouse and Infirmary Buildings, Scartho Road. Mr. H. C. SCAPING, Licentiate R.I.B.A., architect, Grimsby. Quantities by Mr. J. Watson, F.S.I., Hull.

Jarvis	£24,720	0	0
Pumfrey	23,949	0	0
Williams & Son	23,927	0	0
Swaby & Walsham	23,859	0	0
Wilkinson & Houghton	23,681	0	0
Gilbert & Hall	23,141	0	0
Thompson & Sons, Ltd.	22,999	0	0
HEWINS & GOODHAND, Grimsby (*accepted*)	22,945	6	8

LONDON.

For the provision of unclimbable iron fencing and gates at Southwark Park, for the London County Council.

Priest & Mullings	£350	0	0
Hill & Smith	311	5	8
Palmer & Co.	296	10	0
John Elwell, Ltd.	271	0	0
McVey	263	9	4
Johnson Bros. & Co.	256	17	6
Bayliss, Jones & Bayliss	253	0	0
RAYBOULDS, LTD., Workington (*accepted*)	212	0	0

NOTTINGHAM.

For the erection of central buildings, Upper Parliament Street, for the Nottingham Co-operative Society, Ltd. Mr. W. V. BETTS, Licentiate R.I.B.A., architect, Old Basford, Nottingham.

Hopewell & Sons	£15,686	0	0
Woodsend	15,332	0	0
Wright	15,148	0	0
Fish & Sons	14,824	0	0
Bow	14,190	0	0
Dennett & Ingle	14,120	0	0
Long & Sons	14,077	13	0
Barlow & Co.	13,685	0	0
W. Crane, Ltd.	13,554	0	0
Maule & Co.	13,550	0	0
Gilbert & Hall	13,440	10	0
F. EVANS, Bulwell (*accepted*)	13,436	8	7
Architect's estimate	13,800	0	0

SCOTLAND.

For the various works required in the erection of an enteric fever block at Heathfield Hospital, Ayr, for the Corporation. Mr. J. YOUNG, burgh surveyor, Ayr.

Accepted tenders.

D. & J. Milligan, mason work	£1,191	0	0
J. & D. Meikle, joiner work	965	0	0
R. & J. Jamie, plumber and slater work	643	0	0
F. K. Tierney, painter work	226	0	0
Reid & Co., electric light	145	0	0
W. Miller, plaster work	366	0	0

All of Ayr.

WILLASTON.

For the erection of an elementary school (accommodation 200), for the Administrative Sub-Committee for Education for Bebington and Neston area. Messrs. E. KIRBY & SON, architects, Liverpool.

Bullen Bros. & Sons	£4,130	0	0
Jones & Sons	4,074	0	0
Joseph Cooke	3,954	5	4
Rimmer Bros.	3,948	0	0
Rothwell	3,775	0	0
Lee & Son	3,750	0	0
Haugh & Pilling	3,749	0	0
Merritt	3,738	0	0
Davies & Gaskill	3,700	0	0
A. Fleming	3,655	0	0
W. Fleming & Co.	3,649	0	0
Milestone	3,590	0	0
Duthie & Son	3,550	0	0
J. HUXLEY, Malpas (*accepted*)	3,520	0	0
Architect's estimate	3,700	0	0

THE SANITARY ASPECT OF ELECTROLYSIS.

THE successful employment of electrolysers for bleaching, laundry, medical, and sanitary work has long been an accomplished fact, but, the application being technical and the process withal very simple, little of what is being done has found its way into the Press.

Electrolysers are employed to convert ordinary salt water into what is termed electrolytic sodium hypochlorite by sending a current of electricity through it. This decomposes the brine, setting free clorine, oxygen, hydrogen, &c.: the hydrogen escapes into the atmosphere, the chlorine combines with the oxygen to form hypochlorite, which has powerful oxydising properties, but it is very unstable—i.e. it readily parts with its oxygen again.

This hypochlorite as coming from the electrolyser is neither acid nor alkaline, and this is the cause of its instability, or tendency to form combinations with other bodies: either the chlorine or the oxygen is always ready to leave the other element and form fresh alliances. The more unstable the compound, the more rapidly and energetically it acts; therefore the oxygen in this form is one of the most powerful bleaching agents that we have, and it is also a most valuable steriliser—we use this term advisedly in place of the hackneyed word "disinfectant" (a steriliser destroys beyond regeneration organic matter and germs; a disinfectant merely covers up one smell by another and more powerful one—the offending matter is not necessarily destroyed beyond resuscitation). It is far more powerful than carbolic acid in whatever form made up, and is practically equal to perchloride of mercury; it is also cheap to produce.

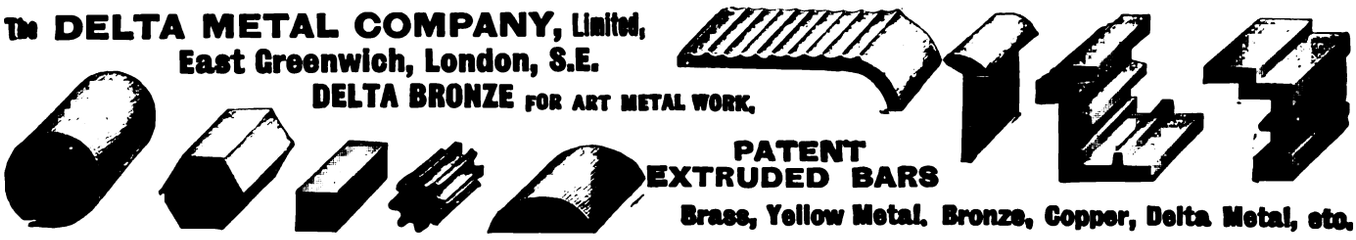
USES OF THE LIQUOR.

In the Laundry.—One bucketful, or two gallons, of the liquor as made is thrown into the washing machine, and twenty gallons of soapy-water added, clothes thrown in, and washing proceeds as usual. The liquor does not curdle soap; it rather promotes lathering, so less soap is used. Many laundries prefer to add the electrolytic liquor to the cold breakdown, in which case it may be used slightly stronger.

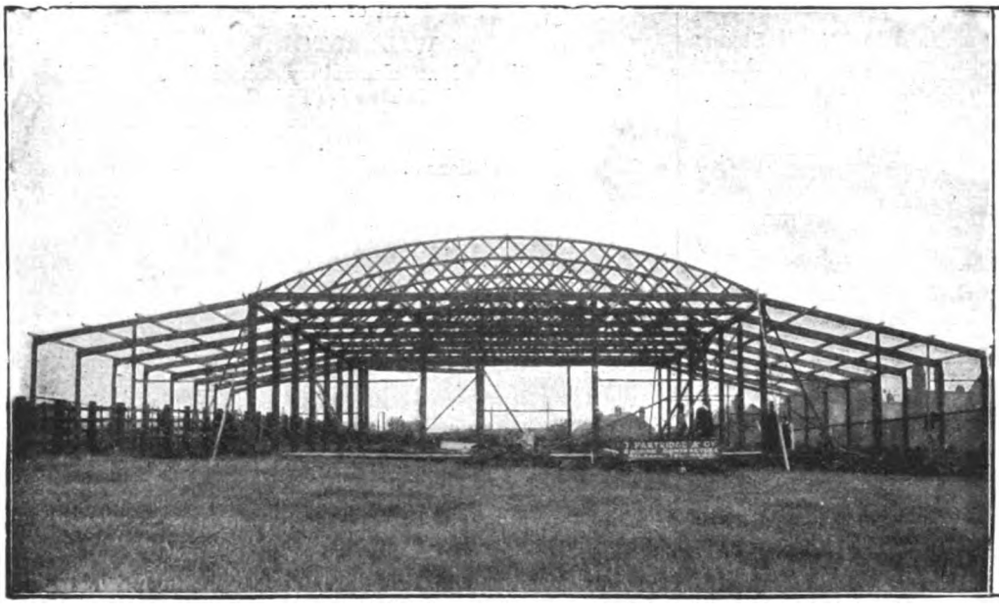
Chlorine has a remarkable affinity for nitrogenous and albumenous matter, under which headings come sweat, composed of lactic and uric acids, and other excretory products of the human body, combined with dead skin dust, which is of albumenous origin. The action of the hypochlorous acid is of a twofold nature, the molecule of oxygen which combined with the chlorine leaves its base and attacks the soluble colouring matters present, oxydising and destroying them. To this extent it does the work chemically better than soap, which only acts mechanically.

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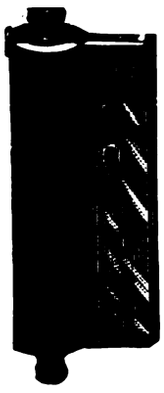
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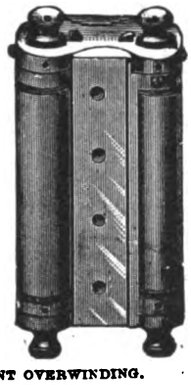
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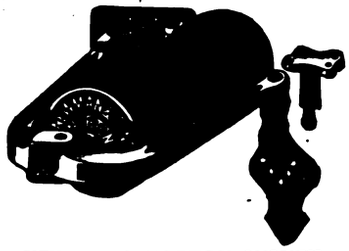
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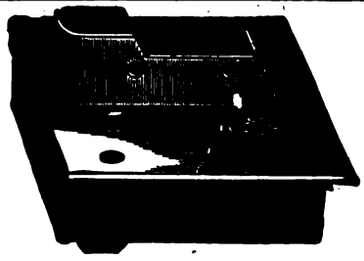
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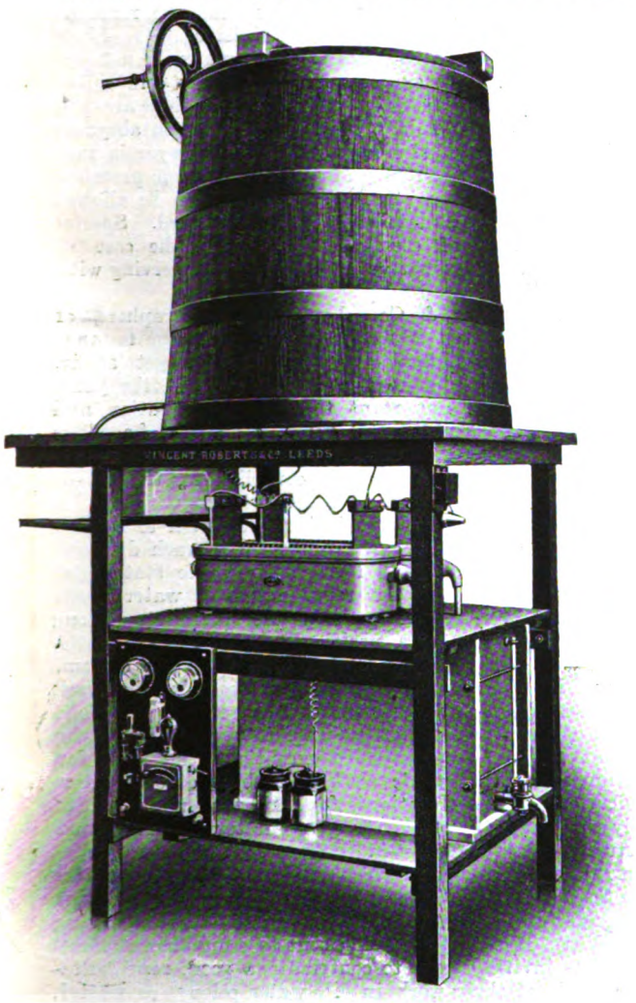
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The chlorine set free combines energetically with the albumenous matter, which escapes the action of the oxygen, forming an insoluble compound along with ammonia and nitrogenous matter present. It is these substances, together with the lactic and uric acids, which, when decomposing or becoming rancid, give foul linen its sour, unpleasant odour. Bacteria and the germs of infection from enteric, cholera, diphtheria, phthisis, scarlet fever, &c., are destroyed; consequently the linen is effectually sterilised and sweetened without damage, as the liquor employed is one-tenth bleaching strength, and the time it is under action is at most twenty minutes, against two hours in the bleach croft.

Sterilising.—Linen known to be infected may be placed in the strong liquor for ten minutes, or for thirty minutes in liquor diluted six times; at this strength it may be employed to wash down the floors and walls of the wards or dormitories, sterilising and sweetening them. The odour which remains is reminiscent of the seaside.

The strong liquor may be used to flush closets, urinals, and drains; it is superior to chloride of lime solution, as it deposits no lime to choke the pipes in time.

It is used still weaker for sterilising suspected drinking water, or removing green weed in reservoirs, where it has



rendered good service: the addition of 3 per million (or 20 minims in 220 gallons) to the water to be treated is amply sufficient for this purpose, and prevents mildew on goods in process of dyeing and finishing.

Every person is aware of the relief secured from the bathing of an open wound in sea-water, which not only reduces inflammation, but is also an excellent means of cleaning it of pus and other matter which militates against healing. If the bandages of a fresh wound be immediately wetted with a weak chlorine solution rendered slightly saline with common salt, the wound will nearly always heal by first intention; it is sterilised, and germs cannot enter to set up inflammation, blood-poisoning, and septic troubles. A sufficiently dilute solution of chlorine will not injuriously affect the tissues of the body.

A weak solution of electrolytic sodium hypochlorite in swimming baths, by combining with and destroying the impurities cast from the bodies of the bathers, will prevent the very prevalent and unpleasant odour in these establishments.

The photograph herewith illustrates a hospital or sanitary type electrolyser as made by Messrs. Vincent, Roberts & Co., Leeds, heating and ventilating engineers. In its essential parts the outfit consists of: "Brine-mixing and supply vat; automatic supply tank, with valve, to give constant flow and prevent overheating (this supplies the electrolyser direct, which receives the current of electricity); the sodium hypochlorite flows from the opposite end of the electrolyser and is stored in a slate tank, to be drawn off for use. A switch-panel, fitted with voltmeter, ammeter, starting and reversing switch, safety fuse, and automatic magnetic cut-out switch for instantaneously cutting off the current should heating-up take place, completes the plant.

The electrolyser is also supplied with electric-contact thermometer, which rings an alarm bell should the temperature rise to 95° F., which may be caused by mixing the brine too strong, or allowing the brine vat to run empty, or forgetting to turn the brine cock on, or permitting the plant to get into a neglected state. If the alarm is ignored, in a few moments the magnetic contact, which shows a red light if everything is working well, comes into action: the red light is extinguished, the current is cut off, and the alarm bell sounded. This time the fault must be remedied, or the apparatus cannot be started again.

With such an equipment the most ignorant person cannot go wrong, so long as he is capable of mixing brine to a 4 per cent. density; all that is needed is to open the brine cock and switch on the electric current.

The electrolysed brine runs through the electrolyser at the rate of twelve gallons an hour, giving 120 gallons a day. It has one fixed strength, due to the two controls mentioned, and this is rather under bleaching strength and therefore harmless; any attempt to make it stronger would cause the plant to cease working. The current employed is 110 volts × 8 to 10 amperes, say 2 h.-p., or 1 unit an hour.

Coarse freezing salt is good enough for the brine; 4¾ lb. per hour run is the consumption.

For an institution employing five washing machines the electrolyser would need to run seven hours, and this would provide the additional liquor for badly stained clothes, for sterilising known infected linen, for washing walls and floors, and for flushing closets, urinals, drains, &c.

Cost of the liquor, about ten gallons for one penny. All other disinfectants are rendered unnecessary. Soda in the laundry may be discontinued, obviating the tendency of clothes to go yellow and linen to rot. There is a saving in soap also, especially in hard waters.

Where an institute generates its own electricity, as most of them do, the cost of the plant should be recouped in less than two years.

Space occupied, about 5 feet by 4 feet by 9 feet high; if the height cannot be conveniently given, the brine dissolver may be set up in a room above.

There are practically four separate controls on the correct working of the electrolyser:—

1. Hydrometer test of brine density.
2. Ammeter reading for correct current passing.
3. Electric-contact thermometer, which rings bell should current rise unduly.
4. Automatic magnetic control, which cuts off current and rings alarm bell if current rises unduly; when working, a red lamp is lit up: this is extinguished when current is cut off.

For checking the accurate working of the electrolyser and the strength of the solution when made, a simple chemical colour test is employed, but apart from this there are four visible checks, viz.:—

1. Hydrometer test for brine, which should read 4 per cent. density.
2. Temperature when working, which should be 90° F.
3. Voltage 110, amperes 8.
4. Flow of liquor, 1¾ pint per minute.

Any variation of one of these factors throws some or all the others out, and one or another of the alarms sooner or later comes into action.

The apparatus being so simple and autonomous, skilled labour is unnecessary; to commence work the brine cock is turned on, followed in a couple of minutes by switching on the current.

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VARIETIES.

A REFUSE destructor is to be erected at the Corporation electricity works, Bridlington.

MR. JAMES EDWARD TAYLOR WAINWRIGHT, of Bidston, of the firm of Thomas Wainwright & Sons, architects and surveyors, Liverpool, left estate valued at £56,592, of which net personalty is sworn at £49,927.

MR. ARTHUR POLLARD has been appointed architect to the North-Eastern Railway Company in place of Mr. W. Bell, who retired at the end of December after fifty-seven years' service.

THE Glasgow Parish Council have approved in principle a proposal to provide accommodation for 300 additional patients at Gartloch Asylum. A definite scheme will now be prepared.

A LOCAL Government Board inspector has held an inquiry at Burton-on-Trent concerning the application of the Corporation to borrow £30,000 for a continuation of the duplicate rising main in connection with the sewage-disposal works.

AN extension to Messrs. Boardmans' at Stratford is being commenced by Messrs. E. A. Roome & Co., Urswick Road, Hackney, under the supervision of Messrs. George Baines & Son, architects. A feature of the contract is the very short time in which the work has to be executed.

THE Hull Corporation Bridges Committee have postponed for three months any further progress with the scheme for rebuilding the North Bridge. Any large expenditure of public money on a work of such magnitude was considered unwise in the present national crisis.

THE Scarborough Borough Engineer has reported to the Corporate Property Committee that damage to the extent of £200 has been caused to the Floral Hall (owned by the Corporation), and £90 to the Town Hall, by the bombardment of the town by the German cruisers.

MR. WILLIAM SMITH, a well-known Aberdeen architect and valuator, has died, at the age of seventy years. Mr. Smith had been in business in Aberdeen for about thirty years, and during that time was concerned with many important building developments.

AT a meeting of the Pontypridd Board of Guardians last week plans were submitted for proposed new buildings and additions to the children's home at Maesycoed. The cost of the work was estimated at £19,965. After a discussion the plans were referred back for further consideration.

THE Conway Board of Guardians have under consideration a scheme for the erection, at a cost of about £6,000, of cottage homes for the children at Llandudno Junction. The plans have been prepared by Mr. S. Colwyn Foulkes, Colwyn Bay, the architect whose designs were awarded the prize in a recent competition.

AT this week's meeting of the Cheshire Education Committee, at Crewe, the county architect's plans of the proposed dairy institute at Henhull Hall, Nantwich, were approved, and ordered to be forwarded to the Board of Agriculture. The plans include a dairy block, education block, and a hostel for thirty-two students, and the approximate estimate of cost is £25,668.

A COURSE of five public weekly lectures on "Belgian Art" will be given in the Architectural Lecture Theatre, University College, Gower Street, by M. Camille Poupeye, of Malines, Licencié en Art et Archeologie, at 5.30 P.M., on the Thursdays beginning the 21st inst. Admission is by free ticket, which is obtainable from the Secretary of University College.

CARDIFF Waterworks Committee have agreed that a circular letter be sent to the architects, builders, and contractors, stating that on and after March 1 next all water fittings and appliances must be submitted to the Corporation for testing, excepting those bearing the registered trade mark. This action is due, it is said, to the unsatisfactory character of the fittings used within the area of the Corporation, and the testing fees will vary from 1*d.* for taps to 4*d.* for cisterns.

THE partnership heretofore subsisting between Mr. J. W. Chessum and Mr. Roland B. Chessum, carrying on business as Messrs. J. Chessum & Sons, at 7 South Place, E.C., has been dissolved by mutual consent as on and from September 30, 1914. All debts due to and owing by the late firm will be received and paid by Mr. Roland Bruce Chessum. The business of the late firm will be transferred to a company to be called J. Chessum & Sons, Ltd., of which company Mr. Roland Bruce Chessum will be governing director

THE Secretary of the War Office announces that, owing to the very great number of offers of assistance and applications for employment received from civil and mechanical engineers, architects, and surveyors, it has been found impossible to acknowledge letters individually. Should an opportunity arise for utilising the services of any of the applicants, they will be communicated with, but the number of applications received far exceeds the probable requirements.

THE Northampton magistrates on Monday last granted an application made on behalf of Mr. A. Clarke, a builder, for an order upon the military authorities directing them to restore an apprentice who had enlisted. Mr. H. W. Williams said that his client was not unpatriotic, for 20 per cent. of his employees were serving with the Colours, and he was treating them liberally. The lad, however, had defied him, and Clarke wished to show him the first duty of a soldier was obedience to those in authority.

CAPT. E. G. PRETYMAN, M.P., has sent to the Press a copy of letter he received from Mr. Lloyd George regarding claims for increment value duty which have been served upon builders and other property owners where sales of property have shown a profit taxable under the Lumsden judgment. Property owners will be glad to learn from it that such claims will not be pressed pending the remedial legislation promised by the Prime Minister. Mr. Lloyd George says: "I am afraid the Government could not possibly see their way to suspend the assessment and collection of increment value duty generally; but they are prepared to instruct the Inland Revenue to hold in abeyance cases in which the relief claimed by the taxpayer is such as would have been granted under the legislation promised by the Prime Minister. Such cases could then be allowed to stand over until a date to be hereafter fixed. Special consideration will, of course, be shown in the case of persons liable to increment value duty who are serving with H.M. Forces."

MESSRS. SPRAGUE & Co., LTD., the lithographers, of 69 and 70 Dean Street, Soho, W., have the courage to make their highly useful Diary a real waistcoat-pocket affair. Yet it gives a space for each of the 365 days in the year, and includes much important technical information and tables, besides the usual postal guide, almanack, &c. The memorandum book, which has now reached its forty-sixth annual edition, has been carefully compiled for the benefit of architects and surveyors. Messrs. Sprague have, of course, for several years devoted their attention to the requirements of the architectural profession in such different matters as photography and lithography, office stationery, and "Ink-photo" process for reproduction of water-colour or pencil drawings, or photographs. As specialists of long experience, they are in a position to give marked satisfaction in all that they execute. Without undue egoism, we may hint that our own centre plates week by week demonstrate the firm's skill in at least one department. Perhaps of more personal importance to our readers is the fact that Messrs. Sprague have exceptional facilities for executing such lithographic work as in bills of quantities, specifications, plans, elevations, &c., and they undertake to supply copies at a few hours' notice for town delivery and by return of post for country.

FURTHER arrangements have been made by the committee of the Scottish Artists' Benevolent Association in organising the special fund for the relief of artists in distress owing to the War. A circular is being sent to a number of Scottish artists inviting them to contribute a good, representative example of their work in oil, water colour, or pastel, or in sculpture, to an exhibition which will be held in Glasgow during the month of March. The exhibited pictures and sculpture will be given to purchasers of five-guinea tickets, the number of which will correspond with the number of works, and each subscriber of five guineas will therefore be allocated one work, many of which will be of considerably greater value than the amount subscribed. In addition to the gift by Mr. D. Y. Cameron of one-half of the proceeds from the publication of an etching (limited to fifty copies at ten guineas each), another distinguished etcher, Mr. Muirhead Bone, has offered to publish a new etching for the benefit of this special fund. A donation of £100 from the London "Arts Fund" has been given to the Scottish Artists' Benevolent Association, and it is probable that a portion of the money at the disposal of the committee of the "Alexander Nasmyth Fund" will be utilised for the same object—to relieve distressed Scottish artists. Donations will be gladly received by Mr. Lawrence Scobie, 49 West George Street, Glasgow.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, January 25.

Architectural Association : Paper entitled "What Architects may learn from the Enemy," by Professor W. R. Lethaby, F.R.I.B.A., at 8 P.M.

London University College : Paper entitled "The Sculptures at Rheims Cathedral," by Mr. Arthur Gardner, at 5.15 P.M.

Surveyors' Institution : Papers entitled "The Report of the Land Inquiry Committee on Urban Land Tenure," by Mr. J. G. Head, F.S.I., and Mr. Joshua Bury, F.S.I., at 8 P.M.

Tuesday, January 26.

Institution of Civil Engineers : (1) Discussion on Paper "The Lateral Pressure and Resistance of Clay and the Supporting Power of Clay Foundations," by Mr. A. L. Bell; and (2) Paper entitled "Engineering Operations for the Prevention of Malaria," by Mr. F. Dudley Evans, A.M.I.C.E., at 8 P.M.

Royal Society of Antiquaries of Ireland : Annual general meeting, 6 St. Stephen's Green, Dublin, at 5 P.M., and evening meeting at 8.15 P.M.

Wednesday, January 27.

Royal Society of Arts : Paper entitled "Portrait Painting." by Hon. John Collier, R.O.I., at 8 P.M.

Carpenters' Hall : Paper entitled "Old Bridges," by Mr. Aymer Vallance, M.A., F.S.A., at 7.45.

EXPANSION OF BRITISH TRADE.

WE referred last week to a proposal to form a public company for the advancement of British manufactures in foreign trade, and we noted that the proposal emanated from a preliminary "Committee for the Expansion of British Trade" formed in Sheffield. It is characteristically English, when we want to do anything that requires funds, either to form a "society" which will appeal to charity or a "company" which may attract cupidity. The primary object of a company is to earn dividends, and, even when the object of the company is so far altruistic that the dividend is limited to a certain maximum percentage, the earning even of that limited dividend must be kept in view and influences the policy and action of the directors even in the operations of charity at five per cent.

In the pamphlet to which we referred last week by Mr. Reuss we find the statement that the editor of the *Financial Times* pointed out that, in his opinion, a great deal of time would be unnecessarily wasted unless a company formed to deal with the difficulties of many manufacturers, and want of knowledge on the part of others, had merged into it some good commercial organisation with established connections abroad, enfolding within itself a competent personnel accustomed to precisely the kind of work which would be required by the company.

We are also told by Mr. Reuss in the pamphlet: "I was approached, and agreed to accept the Managing Directorship, and to allow my business to be merged into that of any company formed, with a view to the extension of British trade, should this be desired and ratified by the Final Committee (an expansion of the "preliminary" Committee), thus permitting myself, on behalf of manufacturers, that wider field at present inaccessible to me for the practical application of the experience and knowledge of trade conditions overseas personally gained."

Thus it would appear that the basis of the proposed company would be Mr. Reuss and his business, which are to be expanded into a big concern with a capital of half-a-million sterling. Whether the present business of Mr. Reuss is a sufficiently good foundation for a company with a capital "of not less than £500,000" we are not in a position to say. The question may be left to the "Final Committee" to determine. "Undoubtedly," says Mr. Reuss, "the company would make very good returns to its shareholders; but the principal object of the company would be a patriotic one, and those manufacturers taking an interest in the company's work and availing themselves of its organisation would derive great benefit in increased business, in addition to the dividends upon any shares they may hold in the company."

The indubitability of the "very good returns" will, as in all companies, depend upon the management of the business. But we cannot forget that "John Company" founded our Indian Empire, and there is no primary reason why a company should not beneficially expand British trade. It might be supposed that the object of the proposed company should be to act as an intermediary between the manufacturer and the ultimate purchaser or consumer, either as a representative or a middleman. In either rôle there is room for such an intermediary.

It cannot be doubted that a partial cause of the inability of British manufacturers to hold their own against the enemy in overseas markets has been the ineffectiveness of their representatives. These consist, as we all know, of two classes—travellers and agents. The former proceed to foreign parts to introduce their employers' goods and secure orders; the latter, whether immigrant or native, reside overseas, and are presumed to have better opportunities of knowing the customers than a visitor. The system of travellers has not been successful because the supply of suitable men is extremely limited and the expense of the system is considerable, so that, except for large firms, it is out of the question. Nor does the system of agents meet the need of the small manufacturer in an entirely satisfactory fashion. There are too many professional agents who, in plain language, betray the trust that a manufacturer must of necessity place in them; men who make an income by collecting agreed payments for "expenses" from a number of firms in this country and obtain precious few orders for the firms they represent.

It might be presumed, therefore, that there is room for a "company" which should organise the selling department for foreign trade of British manufacturers and, by a staff of competent and reliable personnel, provide such an organisation of travellers and agents as, working for many firms, could give to each the advantages that any one could not obtain for itself. But we understand that the intention of Mr. Reuss is rather a company which should meet the conditions that now obtain in many cases of manufacturers who are dubious of the expense of putting down plant to enable them to meet the requirements of foreign trade, either in the fear that there might not be such continuity of business as would recoup them for the expense or from the fact that they do not possess the necessary capital.

These conditions are undoubtedly strong deterrents

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in the attempt to capture enemy trade, and we understand that the intention of the company advocated by Mr. Reuss is to contract for and to stock the necessary quantity of goods to assure a manufacturer of a proper return for plant laid down, and also to finance any manufacturing member of the company, in part or whole, for the acquisition of necessary plant and machinery, provided that the manufacturer shall be a member of the company. It is further suggested that the company should be prepared to finance any engineering or other contract, under proper safeguards, in the interests of the country—and, we presume, of the company.

The company, therefore, would be middle-men, who would buy from the British manufacturer and sell to the purchaser overseas. Such an arrangement would probably be more eagerly welcomed by the manufacturer as it would save him the trouble, which experience shows he is loath to encounter, of making the study which is necessary for success in foreign markets of the languages, the weights and measures, the catalogues, the consignment work, the intricacies of freights, the consular invoice work, the insurance work, the financial work, the question of risk, &c. But the manufacturer's profits would have to be kept down in order to allow of the "very good returns" to the shareholders of the company.

Mr. Reuss shows his appreciation of the many elements that influence the possibility of successful expansion of British trade not least by the proposition that his company should not be in any way dependent upon the present banking methods of this country, but should be in a position of independence in so far as overdraft and financial accommodation are concerned. We agree with him that the establishment of traders' or industrial banks would undoubtedly be a step in the right direction. We would go further and say that the provision of financial support for our manufacturers equal to that enjoyed by the German is an absolute necessity for the continued adequate expansion of British trade.

NOTES AND COMMENTS.

THE report on the work of the Waterways Association during the past year shows that the policy of the association met with gratifying support and made good progress in the first half of the year. Since the war broke out a check in its operations had taken place, but the need for the development of water transport had been emphasised.

Birmingham City Council had already in 1913 unanimously passed a resolution stating that when the Government gave effect to the report of the Royal Commission by appointing a Waterways Board and submitted to Parliament schemes for the improvement and development of the trunk canals connecting the Humber with the Severn and the Mersey with the Thames, they would favourably consider the principle of contribution. On January 29, 1914, a conference of Midland Municipal Authorities was held in Birmingham and addressed by the chairman (Mr. Neville Chamberlain), when the principle of local contribution was approved, followed by communications to authorities situated on the main trunk canals, resulting in the adoption of the following resolution by forty-two local authorities: "That this Council approves of the recommendations of the Royal Commission on Inland Waterways (1909) for the appointment of a Central Waterways Board to acquire and improve the principal canals of the country, but without acting as carriers thereon, recognises the equity of the principle that the local authorities of districts specially benefiting by any national scheme of development should directly contribute, and, should such Board proceed to improve and develop the canals serving this district, is prepared favourably to consider a proposal to bear a portion of the cost, and that the clerk be and is hereby instructed to forward a copy of this resolution to the Prime Minister, the members of Parliament for the district, and the secretary of the Waterways Association."

Nottingham City Council has gone still further in upholding the principle of support by local authorities to improved waterways intended to benefit their particular district, and has pledged itself to take over that portion of the Trent between the city and Newark with a view to the improvement of water transport with the Humber ports. The city will promote a Bill in the coming session of Parliament for power to acquire property, to find the necessary capital for improvement, £150,000, and control and manage the navigation. In August the Corporation had hoped for the assistance of the Development Commissioners, but with the country's commitments, due to the war, that authority, hesitating to expend public money on constructional works in the absence of unemployment, withdrew its support, resulting in Nottingham, subject to the approval of Parliament, boldly shouldering the whole burden of the improvements.

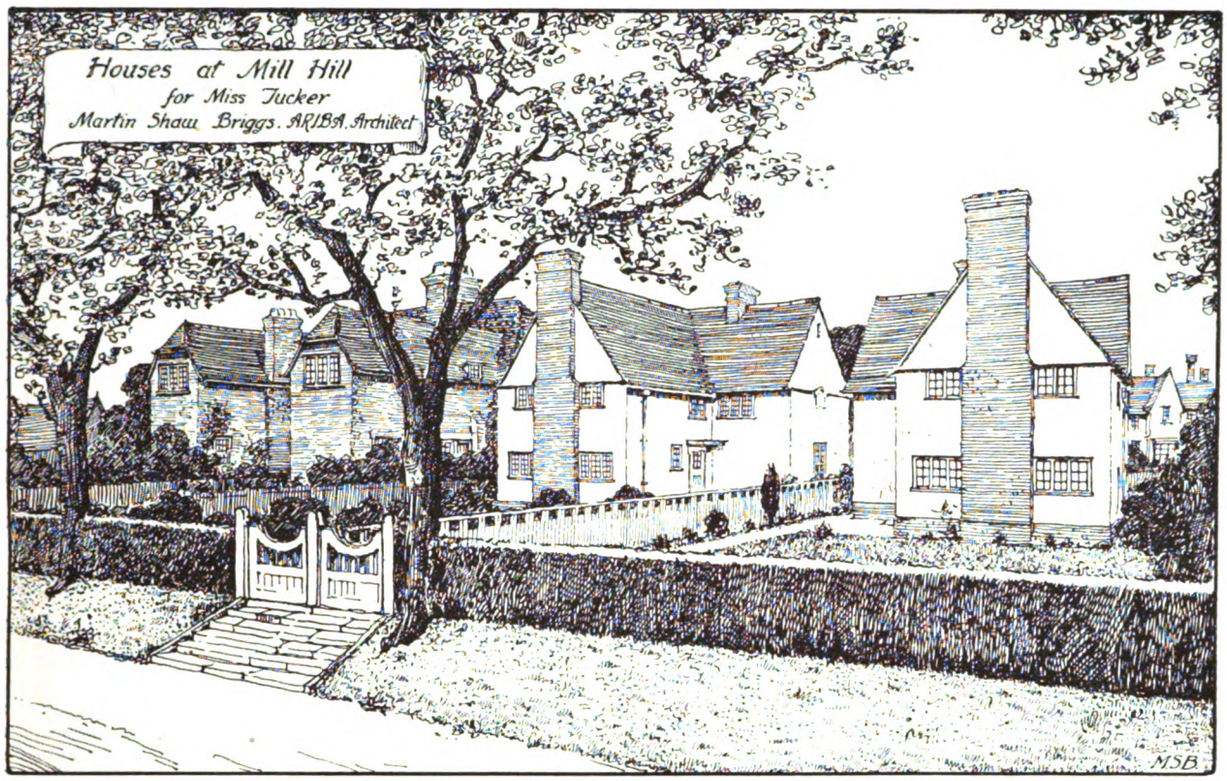
The design of these is such that the improved waterway will form a part of the scheme recommended by the Royal Commission, and may fairly be described as the first step to connect the Midlands with the sea. Boats of 100 or 120 tons will be able to load ex ship at Hull and other Humber ports, and discharge in Nottingham, without transhipment, into 30-ton barges, now necessary at Newark. From Nottingham, canals capable of development to the same standard connect with Leicester (33 miles) and, via Burton-on-Trent (29 miles), with Birmingham (63 miles) and Wolverhampton (78 miles).

The prospect of unemployment for many workers in consequence of the war resulted in a suggestion to the Board of Trade that employment upon works which would ultimately be a remunerative investment for the nation could be found in canal development. The President of the Board of Trade thereupon called for more detailed proposals, which were drawn up in consultation with the Chairman of the Waterways Association, and forwarded to him. The proposals suggested that the Government should announce that they were prepared to advance the sum of £2,000,000 for canal development, roughly divided into four sums of £500,000, to be applied to each of the four arms of "the Cross," conditional upon local authorities giving support of at least an equal amount, the Government to pave the way for the acquisition of existing properties by guaranteeing the owners a rent charge by valuation, based on the earnings of recent years. However, the call for immediate action in canal development to provide employment passed away, the labour returns fortunately showing that, instead of unemployment, there was in almost every district a demand which could scarcely be met.

In conclusion, the report stated that the year's work of the association had demonstrated that the country was ripe for the adoption of the recommendations of the Royal Commission on Canals, when the Government deemed it expedient to give a lead, and that it only needed that to translate the promises of local authorities to support a national system of inland waterway development into action backed by contribution. The present disastrous and scandalous congestion of traffic on the principal railway systems, with the consequent delay of material urgently required for war purposes, served strongly to emphasise the absolute necessity for some alternative method of transport.

The report of Sir Thomas Jackson, R.A., on the tower of Holy Trinity Church, Coventry, is sad reading, but the £6000 he estimates as the probable cost of repair ought to be readily forthcoming from the town itself, the enormous increase of whose industrial prosperity has no doubt contributed in some measure to the decay

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These two small houses were erected by Messrs. WM. MOSS & SONS, LTD., from the designs of Mr. M. S. BRIGGS.

of the stone wall. The spire was blown down in 1665, and rebuilt within the next two years. Further repairs are reported nine times between 1674 and 1854, the latter repairs being described as 'thorough.'

In his recent examination the architect did not detect any failure in the arches, and the piers seemed upright. He concluded the foundation was good, and probably was laid on the solid sandstone rock which was near the surface. Some signs of crushing in the south-west pier under the nave arch were noticed; in the south transept there was a serious crack in the west wall, and a corresponding one in the east wall. These did not come to the ground, and were worst at the top, that in the west wall being nearly 2 in. wide in the upper part. The tower was of very slight construction, and the walls were so much cut up by windows that, except at the angles, they were very weak. They were of perishable sandstone, and somewhere about 1830 the whole seemed to have been refaced with new stone.

"The whole of the tower below the parapet," says Sir Thomas, "is in a terrible state of decay, though the refacing is not a century old. Many of the features of the design are nearly obliterated. Some parts are better than others, and in places the decayed masonry has been mended with new, but the whole surface, though comparatively modern, is in a state of absolute ruin. Mr. Chataway (the local architect) tells me he has already had to remove six tons weight of loose surface to prevent it falling on to the roofs. . . It will be understood from what I have said that the masonry is far past remedy by injecting any preservative solution. There is, I fear, no alternative but refacing the whole tower again as it was done before, but doing it in a better manner and in a better material.

The Sheffield electrical trades do not seem to have made a very good show in their opposition at the Local Government Board inquiry to the application by the Council for borrowing powers in regard to the building of new offices and shops in Bow Street. Of course this is but a flanking movement on the City Council's scheme of setting up as suppliers of electrical fittings. Possibly a frontal attack would be the better policy.

In a letter to the *Western Morning News* a "Ratepayer" writes:

"I notice in the agenda for Monday's Council meeting that the sub-committee appointed by the Visiting Committee make the following recommendation:

"'That it is desirable to extend the asylum to provide accommodation for 440 additional patients. That Messrs. Thornely and Rooke, architects, of Plymouth, be instructed to prepare designs for the extension of the asylum on the terms laid down by the Royal Society of Architects.'

"From the first recommendation it is evident this is to be a very large extension, costing, in all, probably £40,000 to £50,000, and will, no doubt, be built in blocks very similar to each other; and, as to the second recommendation, I consider that before the architects are instructed to prepare designs the Council should know as to the amount of commission that will be charged by them if they should be elected to carry out the work.

"As it is clearly laid down in the R.I.B.A. scale of professional charges, clause 4: 'When several distinct buildings, being repetitions of one design, are executed at the same time from a single specification and one set of drawings and under one contract, the usual commission is charged on the cost of one such building, and a modified arrangement made in respect of the others.'

"This being one of very few opportunities an architect has of quoting the value of his services, I would suggest that the above-mentioned recommendation should receive further consideration before the Council is asked to approve, in order to ascertain what the 'modified charges' under the circumstances would be for the architect and the quantity surveyor. There are several architects in the borough who would acquit themselves with credit, and should be given a chance of obtaining a good-sized job."

"An Architect Ratepayer" follows this up with the reply:

"Whilst agreeing with the letter of 'Ratepayer,' might I suggest that the time is now come when all qualified architect ratepayers should be put on a

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'roster' by the Council, and the work undertaken be fairly spread amongst the architects of Greater Plymouth. This would save much heart-burning on the part of the architects, and also obviate the invidious position of many members of the Council owing to the importunities of their professional friends."

The two letters form an interesting illustration of professional life in a provincial town which scarcely, we think, requires comment.

COMPETITION NEWS.

BURNLEY.—The Board of Management of the Burnley Victoria Hospital have received the award of Mr. H. Percy Adams, F.R.I.B.A., of London, the assessor appointed to adjudicate upon the plans submitted by the ten selected architects in competition for the proposed hospital extension. The names of the authors of the four premiated plans, in order of merit, were as follows: (1) Mr. William A. Pite, London; (2) Messrs. Hitchon and Pickup, Burnley (premium of £75); (3) Messrs. Taylor and Simister, Oldham (premium of £50); (4) Mr. T. H. Vowles, Burnley (premium of £25). The names of the other competing architects were (in alphabetical order): Messrs. John Brooke and Elcock, Manchester; Mr. Hugh Healey, Manchester; Mr. William A. Quarmby, Burnley; Mr. Thomas A. Pole, London; Mr. A. Saxon Snell, London; Mr. Arthur W. Worrall, Wolverhampton. The proposed extension will hold about fifty beds, and a new operating theatre and a new nurses' home will be provided.

DONCASTER.—At the last meeting of the Town Council a recommendation was considered from the Council in Committee: "That the Corporation prepare a new sewage scheme for the extended borough on competitive terms and ask the advice of the Institution of Civil Engineers as to the conditions consistent with their Institution." It was urged that the borough surveyor was overworked, and that an expert ought to be engaged to do the work. A motion to reject the recommendation was defeated, but a further resolution to refer the matter back to committee was carried.

MACCLESFIELD.—At the meeting of the Lands, Railway, and Town Development Committee a letter was read from the Hon. Secretary of the Manchester Society of Architects protesting against the competition for obtaining plans, &c., of workmen's dwellings, and suggesting the engagement of an architect to prepare the scheme; also that an assessor should be a well qualified architect in independent practice. After consideration it was decided that the Town Clerk reply, stating that the competitive scheme is a purely local one, and that it rests with the local architects to send in plans themselves or not, and, further, that the architects can make arrangements with the builders of the town, so that they can do the work. It was further resolved that the borough surveyor reply to a letter from the Royal Institute of British Architects that the proposed competitive scheme for plans, &c., for workmen's dwellings is purely a local one.

Members of the Society of Architects are requested not to take part in this competition without first ascertaining that the conditions have been approved by the Society, which is in negotiation with the promoters with a view to securing certain amendments.

NEWCASTLE.—The competition for the extension of Rutherford College for Girls has been decided in favour of the plans submitted by Messrs. Marshall and Tweedy, architects, 17 Eldon Square, Newcastle. The competition was limited to six local firms experienced in school designing. Part of the scheme includes the erection of a new assembly hall to accommodate 1,000 persons.

WHITAKER'S ALMANACK for 1915 is no less amazing than any of its predecessors, for a compilation of this sort must always arouse a feeling not unlike awe. The text of the forty-seventh edition occupies nearly 900 pages, and comprises the concentrated essence of several volumes. It is significant that last year's article on "The World's Peace" is replaced by one on "The Great War." In many other ways the information is brought as abreast of the moment as the exigencies of printing and publishing allow. All the familiar and invaluable features of the Almanack are retained. We were surprised to learn that the mural paintings in the Central Criminal Court were by Sir W. B. Richmond and "General" Moira—surely the latter professor has enjoyed phenomenally rapid promotion.

ILLUSTRATIONS.

HOUSE AT BUDLEIGH SALTERTON.

THIS drawing shows the south front and a bird's-eye view of a house and garden for Mrs. Ferrier at Budleigh Salterton, Devon. Owing to the steep slope of the site, it has been necessary to lay out the garden in terraces. The materials of the house are red and various toned bricks up to the first floor, with rough-cast above. The builder was Mr. J. C. Palmer, of Budleigh Salterton, and the architects Messrs. Rogers, Bone & Coles.

DODBROOKE CHURCH, DEVON.—DESIGN FOR A NEW REREDOS.

THIS design shows an adaptation of existing triptych to a carved oak frame and base forming a reredos in the Lady chapel at Dodbrooke Church, Devon. The carving was carried out by Mr. A. Robinson, of 54 Broad Street, Bloomsbury, and the architects are Messrs. Rogers, Bone & Coles.

OFFICES OF THE AGENT GENERAL OF WESTERN AUSTRALIA, SAVOY HOUSE, STRAND, W.C.

IN view of its historical associations and position, "Savoy House" has become a landmark to Londoners, a circumstance due possibly to its name rather than to any architectural merits which it may possess.

Situated midway in the Strand, at the junction of Savoy Street and that busy thoroughfare, it is recognised as an ideal position for the offices of the representative of such a progressive State as Western Australia, which has so many and varied resources to bring before the people of the world's metropolis. The programme of rendering the building distinctive was not an altogether easy one.

The street front to the Strand and Savoy Street, from the pavement up to and including the main cornice at the first floor level, has been pulled down and rebuilt in pure black Belgian marble without relief whatsoever, save that which comes naturally from the highly polished surfaces, the white lettering of the fascias, and the large white marble panel over the main entrance inlaid with the black swan of Western Australia, which gives the key note of the whole scheme.

The design has been kept severely simple in character and the full richness of the marble thus accentuated. By an arrangement of lighting the swan panel is brilliantly illuminated at night.

The whole of the building above the black marble base has been painted white, the effect of which has pulled together and dignified the former ineffectual architectural detail.

Through swing doors one steps into a fine entrance hall running the depth of the building, some 66 feet. The old entrance hall and staircase from Savoy Street, which formerly divided the building into two, have been swept away, and a re-arrangement of the old floor levels has given the interior a new aspect.

The hall is divided by a glazed screen and counter, approached by wide circular steps, on the right of which is the passenger lift and telephone exchange.

The walls, at present painted, are ultimately to be panelled with fine Western Australian jarrah to a height of 9 feet. The panels to the front of the counter afford an example of the beauty of this timber, the use of which in England is likely to become extensive when it is better known. At present it is generally considered that both jarrah and karri are eminently suitable for wood-block road paving and dismissed at that, but this is a view soon altered when the full possibilities of utilising these magnificent timbers are realised.

From the entrance hall, in which the emigration offices are mainly situated, a new oval staircase leads up to the first floor and down to the lower ground floor; while the well-lighted windows, both in the Strand and Savoy Street frontages, afford ample room for the display of the numerous Western Australian products.

At this level there is a second entrance, from Church Row, with a staircase leading to the basement, which comprises lavatories, heating chamber, motor room, and stores.

The main feature of the alterations throughout is the elimination of many of the old division walls, giving large airy offices in place of small rooms.

On the second floor, overlooking Savoy Chapel and the river, are the administrative offices of the Agent-General and the Secretary. Here, again, the note of black is found.

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The two fireplaces are built of black Belgian slabs and white statuary marble, the heavy projecting shelves being supported by two bronze lions, the masks being modelled by Mr. Albert Hodge. This floor, as well as that in the entrance hall below, is laid with secret-nailed Western Australian jarrah boards 3 inches wide, unstained, and wax polished. The woodwork throughout the room is painted black, powdered with gold and polished, and the cornice to the vellum white ceiling is again black, relieved with gold lines and stencilling.

The remaining offices are treated in one scheme of colour of a pleasant cool green with cream walls, while, thanks to sound craftsmanship, there is throughout the building an atmosphere of convenience and comfort, without unnecessary embellishment.

The architects were Mr. John W. Simpson, F.R.I.B.A., and Mr. Maxwell Ayrton, A.R.I.B.A., and the general contractors were Messrs. W. E. Blake & Sons, Ltd., London.

ORIEL WINDOW, HAMPTON COURT.
ST. BRIDE'S CHURCH, FLEET STREET.

THE drawings we reproduce of these buildings were made by Mr. Chas. S. Carter during his tour as holder of "The Architect" Travelling Studentship for 1914.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the Royal Institute was held at their premises on Monday, the 18th inst., Mr. A. W. S. Cross, M.A., Vice-President, in the chair.

The death was announced of Mr. John Henry Cossar, Licentiate.

Mr. F. C. Eden, M.A. (Oxon.), then read a paper entitled

"VARALLO AND ITS IMITATIONS."

The district to the south of Monte Rosa and the Simplon, while not remarkable for the excellence of its ecclesiastical architecture, is rich in the interesting class of buildings known as sanctuaries.

They are of every degree of architectural importance, ranging upwards from the tiny mountain shrine, rudely built and poorly furnished, at the bottom of the scale, through the modest church provided, maybe, with lodgings for a chaplain or a suite of rooms for the accommodation and refreshment of pilgrims, to the vast proportions of such an institution as Oropa, dominated by its enormous hospice. Others consist of scattered chapels grouped round a monastery, or strung out along the way to a pilgrimage church, famed for the possession of a miraculous image or other venerated object. Each has its special *festa*, usually in August or September, attended by larger or smaller throngs of country folk, according as the celebrity of the sanctuary is confined to its own valley or is something more than merely local. They are to be found in the most varied situations, on the very mountain top, on the verdant slopes of the foothills, and by the high road that skirts the valley.

But the most complex and interesting type of sanctuary is undoubtedly the Sacro Monte. This consists of a series of chapel-like buildings designed to protect and exhibit groups of life-sized statuary, provided with porticoes or other shelter for spectators, and so arranged as to be approached in a definite order. Of these Varallo is the most famous, both as being the first thing of its kind, and for the great artists who participated in its production.

In the year 1481 Bernardino Caimi, member of a noble Milanese family, minor observant of the Order of St. Francis, on returning from Palestine, conceived the project of founding a sanctuary, a new Jerusalem, which should represent with some verisimilitude the sacred sites yet fresh in his mind.

Great ideas are seldom original in their essence; usually they are based on something that has gone before. The originality of genius merely precipitates what was already in solution. This was the case with the new idea of the Sacro Monte.

The Sacro Monte must be understood as a development of the centuries-old practice of making memorials of pilgrimages to the holy places in Jerusalem. The chapels are so many "stations," though not all, nor indeed any of them, necessarily connected with the Way of the Cross. At Varallo the whole of the Redemption Story is displayed in more than forty groups of figures; at Orta the life of St. Francis is the theme; at Varese and Crea the XV. Mysteries of the Rosary; at Oropa the life of Our Lady; while Graglia, the grandest scheme of all, which, however, never came to completion and is now ruinous, was to have included no less than a hundred scenes from the life of our Lord.

As in its origin, so in its evolution, the devotion was typically Franciscan, and the three best-known sanctuaries of this class all grew up under the fostering care of that famous Order.

About the year 1486, after examining many sites, Caimi came to the conclusion that the hill overhanging Varallo, and known for its steepness as "sopra la parete," was the most convenient for his purpose. The townsfolk falling in readily with the project, he obtained cession of the ground and also of the site for a convent at the foot of the hill. Some sort of establishment in Varallo itself was essential; a place for work, study, collection of materials, and direction of the workmen. So the convent and church of St. Maria delle Grazie at the foot of the hill came into being. The steep, narrow path by which the hill-top had been approached was succeeded by a commodious road for the transport of materials, and finally, in the year 1491, took place the inauguration of the Chapel of the Holy Sepulchre, the *clou* of the whole scheme.

Caimi was a man of extraordinary energy. Though constantly travelling on the business of his Order, he managed to find time between his tenure of various offices to visit Varallo for the purpose of organising, directing, and hastening the completion of the work. And to such good purpose that at the end of his life (1499) he left not only a sufficient number of executed groups to make his conception clear, but a fund of potential energy to carry it to completion.

To the south and west the ground falls away precipitously towards the town; less so to the east, while towards the north it rises, at first gradually, then more steeply, to a forest-clad hill, from whence you may get a good bird's-eye view of the whole Santuario.

In spite of their variety the planning of these chapels is of the simplest. Three systems have been followed.

The very earliest was a simple rectangular chamber without any sort of barrier or division, so that the spectators actually passed through the show-space. There were obvious inconveniences to this arrangement, witness the sixteenth-century names and dates still to be seen scribbled on the frescoed walls of the Crucifixion Chapel, and so the place for the spectators came to be railed off. The partition was effected by a screen or grille of carved wood, so designed as to allow an easy view of the ceiling and wall paintings as well as the figures. Most of these screens are highly ornate and varied in design. In the latest examples the whole of the interior space is given up to the sculptures, and an external portico is added for the accommodation of the pilgrims. Both methods, the screen and the portico, are used at Orta, at Varese the latter only.

The walls are of plastered rubble with granite dressings, and the roofs are covered with the heavy stone slabs which give such dignity and character to all the roofs in these upland valleys.

It is the piazza with its two-storeyed cloister and circumjacent chapels that must be deemed the climax of the whole composition, not the big church which strikes the only jarring note with its aggressive modern façade.

At Varallo the chief artistic interest centres in the contents of the chapels, at Orta and Varese in the buildings themselves. These are designed to contain groups of painted imagery, which combine with their frescoed backgrounds to form tableaux of Sacred History, emphasised with all the realism of a scene on the stage. It is hard to resist the conclusion that the designers of these tableaux had in mind the scenes in the "Sacre Rappresentazioni," or Mystery Plays, with which they would be familiar. The chapels are, in fact, small theatres, and their form must have been suggested by the little erections called "mansiones" used in the Mysteries, and labelled "Palatium," "Templum," and so forth, from one to another of which the actors moved for the different scenes of the drama.

The arrangement of the groups themselves follows in many points the accepted conventions of the contemporary religious theatre; compare, for instance, the introduction in the Annunciation scene of a *prie-dieu*, one of the recognised "properties" in representation of that subject; in the Flagellation, the man in the foreground stooping down and tying a bundle of rods; the crowd of what are really stage "supers" following in the Way to Calvary; the arrangement of the personages in the Last Supper; five one

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side of the table, three at each end, and two, one of them being Judas, on the remaining side.

The earliest figures, those which came from the Franciscan workshop, were of wood. But early in the sixteenth century Guadenzio Ferrari, at that time quite a young man, was summoned to fresco the convent church, where he painted what Symonds calls "a whole epic of the Passion"; and a few years later we find him at work in the chapels of the Sacro Monte. It was he who introduced the use of terra-cotta in place of timber for the figure groups; and in 1523 he is engaged upon the groups and frescoes of the Crucifixion Chapel, being then at the height of his powers. Several other artists of note were employed, the most eminent of whom was Jean Wespin, a native of Dinant, in Belgium (1560-1615), known, according to the Italian practice, by the nickname Tabacchetti.

The architcetural merits of these buildings, considered in the abstract, so to say, or as they would appear when reduced to line and scale, are not, perhaps, particularly noteworthy. On the whole it is certainly not so, though Orta and Varese may supply instances to the contrary. It is simply as they are, where they are, and as what they stand for that they make their appeal. All these sub-alpine valleys still possess the charm of romance; and when the works of man enhance instead of detracting from that rare and vanishing quality they have done all we need ask of them.

The Sacro Monte of Orta occupies a wooded promontory overhanging the town and lake of that name.

The same materials are employed here as at Varallo—viz., granite and plaster; but with the addition of a rusty green serpentine, which takes and retains the finest detail, and is used for the smaller moulded members. The lay-out is less confused than at Varallo, and the chapels seem to have been placed so as to get the best effect from each separate building, rather than with an eye to picturesqueness of grouping. By this time any such attempt would have been rendered nugatory by the denseness of the trees.

The first stone was laid in 1591, and between that date and 1630 all the best chapels were built. The evidence of the building accounts still preserved in the archives of the monastery points to a certain Padre Cleto of Novara as their author. It is significant that the style is old-fashioned—in fact, about a century behind the times—suggesting the inference that the designer was an amateur of Classic architecture, uninfluenced by current movements and fashions in art.

The highest point of the Sacro Monte is occupied, as at Varallo, by the circular Chapel of the Stigmata. The plan is noteworthy not only for its simplicity and inevitableness, but as the earliest example among these chapels of a circular temple surrounded by a portico, and as the model for much subsequent design both here and at Varese. But it has further claim upon attention. Once this type of plan had been brought to the notice of the artists of the Renaissance by the study of Classical antiquity, it seemed to inspire many of their dreams. The pictorial value of the grouping of columns and arches, the ever-changing lights upon curved colonnades gleaming against their shadowy background, made an irresistible appeal. The difficulty was to find an excuse for such a building, some real use to which it could be put. For ordinary church-building purposes a plan of this kind had been out of fashion for centuries, and was now considered impractical.

But once again on this wooded hill by the lake of Orta came the opportunity. For sheltering and displaying groups of statuary the circular plan was as serviceable as any other, and, since the pilgrims had to stand outside, the external ambulatory was justified. The longed-for ideal could at last be adapted to practical needs, and with the opportunity came the man. Our wonder is that it should have been left for an obscure friar, whose name is unknown to fame, whose resources were limited, who was born out of time, to give us one of the purest, most refined, and most original buildings which the Italian Renaissance ever produced.

The buildings of which the earlier sanctuaries consist seem to be strung together upon their connecting paths like a chaplet of beads allowed to fall into accidental folds and kinks. At Varese the thread is stretched to its full length, and the chapels follow one another in orderly progression by the side of a high road. But what a road! Imagine a broad-paved pilgrim's way about two miles in length, ascending in zigzags along a wooded ridge till it reaches a mediæval town perched on the summit of the "Arête." At every turn of the road stands a chapel, so placed as to show to the best advantage from below and to afford from the loggias provided by the thoughtful designer the best viewpoints for the enjoyment of the landskip.

Here, for the third time, the scheme of a Sacro Monte originated with the Franciscan order, the moving spirit being a Capuchin friar, Giovanni Battista Agguggiari. The task of raising funds was attended with no little success. The cost of the finely engineered road, the construction of which seems to have proceeded contemporaneously with that of the chapels, must have been enormous. The chapels themselves are on a more ambitious scale than had been attempted before, and stand on lofty substructures which jut, like bastions, from the retaining walls of the road.

The subjects illustrated are the Fifteen Mysteries of the Rosary, divided into the usual triad, Joyful, Sorrowful, and Glorious. The commencement of each group is marked by a triumphal arch and a fountain, while the church at the top containing the venerated image is, of course, the *raison d'être* and climax of the whole.

The design was entrusted to a local architect, Bernascone of Varese. With the possible exception of five late and unimportant chapels, all are his work, and show their author to have been a man of no little imaginative and inventive power. Though begun only ten years after Orta, about the year 1606, they are quite a century later in feeling. One is at once struck by the difference in the colour of the buildings; the stone roofs and whitewashed walls of the mountain valleys have been exchanged for the red tiles and yellowish stucco of the plain. Granite is more sparingly employed, while the increased use of stucco imparts a sort of coarseness that smacks of a declining art.

An important new departure was inaugurated by Bernascone. At Varallo and Orta the figure groups can only be seen from one point of view. Now for the first time additional openings are provided at the sides. The architecture generally suffers from the indifference and worse of the carving. Bernascone seems to have recognised the impossibility of securing tolerable sculpture, and wisely limited himself to a minimum, a truss here, a festoon there, and sometimes a cherub's head in a tympanum; but these latter are often inconceivably gross and spiritless.

The ironwork generally is poor. The grilles in the view openings are loose and invertebrate where they are not mere grids of upright bars; their dulness somewhat relieved by the exquisite patina of the bronze reels and spindles through which they are threaded.

DISCUSSION.

Mr. Paul Waterhouse, in proposing a vote of thanks, said he thought the only reason why he should have been honoured with that task was that he had been born in Manchester, which was perhaps the place least like Varallo. It was difficult to add anything in the way of a speech to the paper just read. More than thirty years ago he paid his first visit to Orta. Mr. Eden's paper had been most illuminating and most charming. He had read them much more than a mere architectural paper, for the buildings could not be described properly, so full of sentiment were they, by anyone who did not understand them. Mr. Eden has given more architectural study to these mountains, perhaps, than anyone else. There seemed to be something particularly touching about the alliance of the Franciscan Order with such graceful examples of Renaissance building. It was touching that a poor Order should be allied to such luxuries. The whole spirit of the Order seems to breathe in these delicate pieces of work, though at first sight they may seem contrary to it. Every student of the Renaissance who views the period aright realises, not merely that common gratitude for opportunities received made the architect the servant of the Church, but that the entire spirit of the Renaissance was intimately consecrated to religion. Nowhere is that better seen than in the mountains of northern Italy. Though some of the buildings are so simple, barely more than cottages, yet they are full of intricate architectural thought. A present-day architect engaged to design a circular building could not do better than go to one of the sanctuaries. On his last visit to Orta he had been particularly struck by the well-house for the way in which it got over certain technical difficulties. Mr. Eden had alluded to the Church of St. Maria delle Grazie at the foot of the hill overhanging Varallo. He (the speaker) believed there was only one other church where the same arrangement exists for the display of a large painting; here the east end seems practically all closed by a wall which serves the purpose of a chancel screen, while the only sounds of the Mass come from the low arches at the base. The trees at Orta may possibly have overgrown the artist's original intention, but

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nothing can exceed the charm of the many temples hidden by the thick growth. In conclusion, he would like to say that the pictures shown on the screen had been most excellent and that they thanked Mr. Eden for leading the audience into the very spirit of the men who erected those buildings.

Mr. E. P. Warren remarked that, having followed and read the paper with the greatest possible interest he would begin by seconding the vote of thanks for a most charming paper. What had struck him very much when visiting Orta was the confusion of the plan caused by the growth of the trees and the magnolias which gave an extraordinary charm to these semi-circular looking buildings. The coarse-grained dark granite used there produced an effect like what may be seen in Brittany. They struck him as being a direct evolution from the necessities of the material. At Varallo the effect is less concentrated because there is more of it. These immense groups of terra-cotta of extraordinary excellence are commingled with the wall paintings and produce an effect unlike anything he had seen elsewhere. The whole thing was intensely theatrical, though that was not a term of opprobrium. The appeal still remains forceful and the groups serve their end with the people for whom they were intended. To the tourist they produce an appeal which is very singular and very definite. He thought that a painter or a sculptor would get very valuable lessons in composition from them. There was also abundant opportunity for the study of circular, elliptical, and variously shaped buildings and of their lay-out as caused by the ground. One thing which ought to be borne in mind when considering such groups of buildings as shrines or sanctuaries was that, although they served as an excitation to devotion, they also meant an enormous access of wealth to the town in which they were placed. There was always a natural tendency to make the most of such a possession and to rival the shrines or sanctuaries of other towns. Unless that element were taken into consideration it was impossible to arrive at a just appreciation of the effects one finds.

Mr. Walter Tapper alluded to the tremendous amount of interesting detail which is to be found in these sanctuaries; the ironwork, for example, is very well designed. At Orta the colonnades are striking from the use of differently coloured pebbles. Indeed, the first thing which struck him when he saw the place was its delightful colour. The diversity of plan was most remarkable. The first chapel one sees seems to have the only possible plan; but the next one may be even more interesting.

Mr. Curtis Green considered Mr. Eden was one of the most interesting minds in the profession at the present time, so he always listened to what he had to say. In this part of Italy the whole countryside is rich in mountain sanctuaries. It was noteworthy that here were an ignorant primitive people doing work in a perfectly natural way, and that art was the result. He felt sure that if the people of that date could do such pleasant work with such simple materials it was possible for architects at the present time to do pleasant work with the means at their disposal.

A vote of thanks was then passed by acclamation.

Mr. F. C. Eden, in acknowledging the vote of thanks, said there were three kinds of figures—namely, the timber, the terra-cotta, and the stucco. Some of the figures in the groups had been in course of time altered, terra-cotta placed with wood and so on. Certain of the figures had been draped in linen and then the surface decorated with gesso. A figure of Eve had been transformed into a Roman soldier. In many cases flax was stuck on as hair. Such accessories as canopies, tastas ,&c., were real.

The next meeting will be on Monday, February 1, when the Council's nomination for the Royal Gold Medal will be received and a consideration will take place of the revised schedule of charges.

THE DAMAGED COLUMN OF MARCUS AURELIUS ANTONINUS, ROME.

By J. TAVENOR PERRY.

THE appalling earthquake which has just visited central Italy has for the moment withdrawn the attention of architects from the ravages of the northern barbarians elsewhere, but the details we have so far received are too vague and insufficient to enable us yet to measure the extent of the damage done to the public buildings. From the accounts, however, published in the *Times* and other journals we can judge that, so far as Rome itself is concerned, except perhaps, in some shaking which the upper part of the dome of St. Peter's, not at present defined, has sustained, the damage to the ancient or historical structures of the city is mainly superficial, the most important exception being the celebrated Antonine Column standing in the centre of the Piazza Colonna. This, however, is alarming enough if we accept as correct the first *Times'* report sent to that paper from Rome on the same day that the accident happened. It runs thus: "The column of Marcus Aurelius in the Piazza Colonna was broken in various places, and the beautiful bas-reliefs have been irreparably damaged. Possibly the column will have to be pulled down." A further account states that the shaft, about half way up, appears to be twisted about six inches out of the straight, and that the damage to the bas-reliefs occurs principally in those which "represent the conquest of the Marcomanni."

A brief account of the state of this column at the end of the sixteenth century, and the works carried out for its reparation by Domenico Fontana, will be to some extent reassuring, and will tend to show that it is not in so dangerous a condition as is supposed; while a general

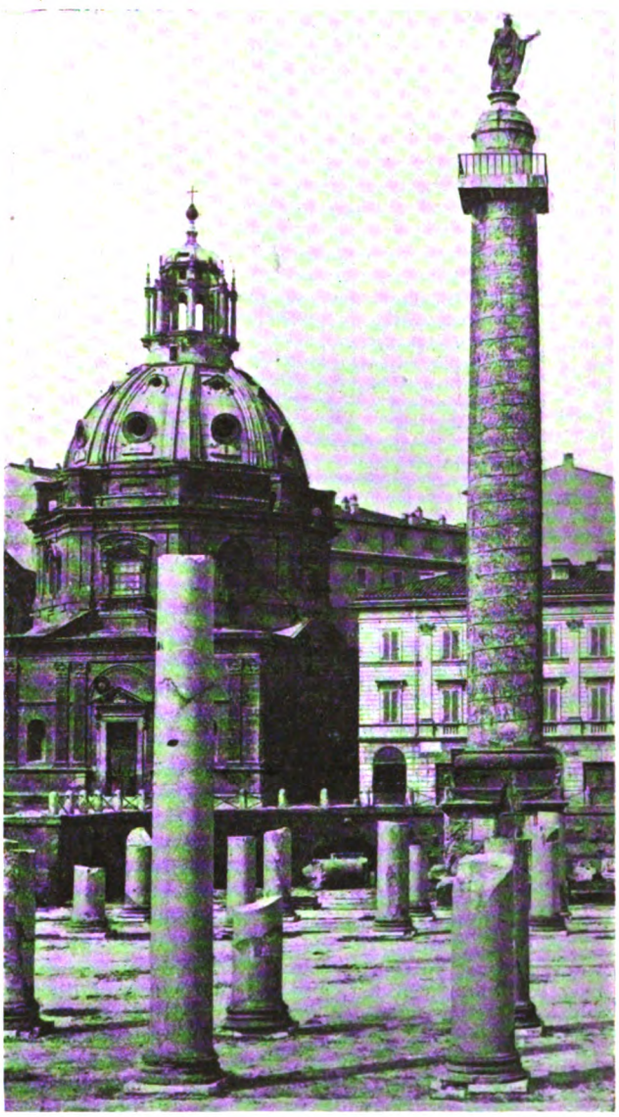


FIG. 1.—TRAJAN'S COLUMN.

description of the other ancient monumental columns still standing in Rome cannot fail to be of interest to all architects at the present juncture.

There are now five such columns in various parts of the city, of which three occupy the positions on which they were first set up. These are Trajan's column in the Foro Traiano, the Antonine in the Piazza Colonna, and the column of Phocas—"the nameless column with a buried base"—in the Roman Forum; and, besides these, the pedestal of the column of Antoninus Pius, removed from its original position on Monte Citorio, is preserved in the Vatican. The two other ancient columns are the one set up before the entrance of Sta. Maria Maggiore on the Esquiline and the other in the Piazza di Spagna, both taken from ancient buildings by the Popes and now carrying statues of the Blessed Virgin.

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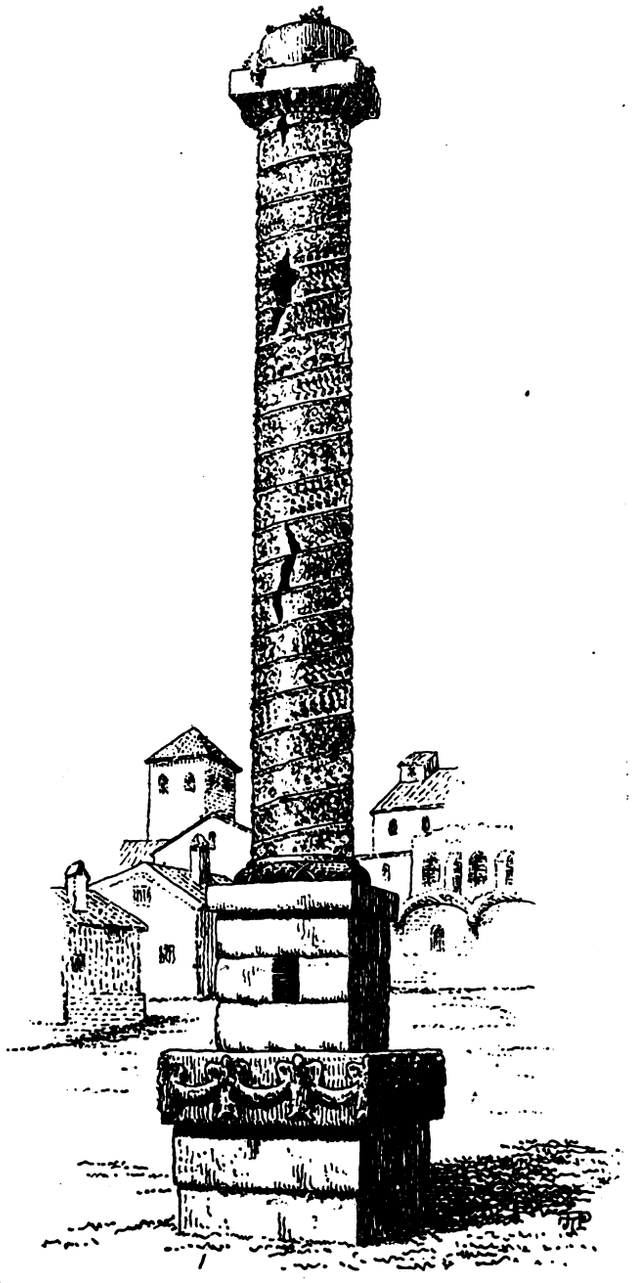


FIG. 2.—COLUMN OF MARCUS AURELIUS, WEST SIDE, BEFORE RESTORATION IN 1588.

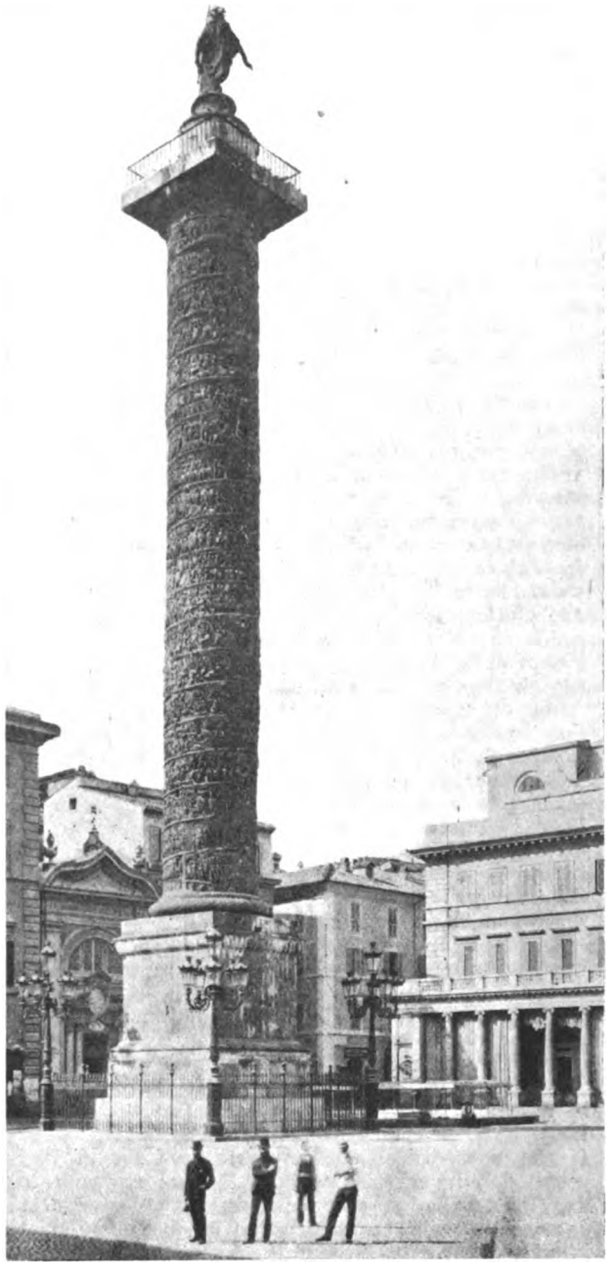


FIG. 3.—COLUMN OF MARCUS AURELIUS, NORTH-EAST SIDE, AS RESTORED BY FONTANA, 1588.

The columns of Trajan and Marcus Aurelius occupy a pre-eminent position in the minds of all visitors to Rome, whatever their particular taste or however uninterested they may be in works of art, and they form two of the sights which every "personally conducted" tourist is taken to see. They excited the greatest interest throughout the Middle Ages, and were spared by the Vandals in the fifth century and by the Germans in the fifteenth during the *Sacco di Roma*. The solicitude of the Romans for the preservation of these monuments of antiquity is shown by the decree of the Senate in 1162, in particular in reference to the column of Trajan, which runs: "In order that it shall never be mutilated or destroyed, but shall remain as it stands to the honour of the Roman people, as long as the world endures. Anyone daring to injure it shall be punished by death and his property shall fall to the treasury." And an inscription, in the atrium of S. Silvestro in Capite, in the care of whose convent the column of Marcus Aurelius was placed, says in forcible language: "Anyone taking the column by force from our convent shall be eternally damned as a spoiler of the Temple, and shall be encompassed by the everlasting anathema. So be it. Peter by God's grace humble Abbot of this convent, with his brethren drew up and ratified this in the year of the Lord 1119, in the XII. indiction." In refreence to Trajan's column it may be noted that it was in use as a bell-tower when Charles V. visited Rome.

Trajan's was the first of these columns to be erected in Rome, the architect being Apollodorus, who placed it in a courtyard about 40 feet square surrounded by lofty buildings from which the sculptures could be carefully studied, and only the statue at the top could be seen over the roofs in the city (fig. 1). It stood, without the statue, 128 feet high, and was constructed of thirty-four blocks of Carrara marble, of which eight form the pedestal, one the base, twenty-three the shaft, one the capital, and one the base of the statue. The spiral band of high reliefs, representing the Dacic wars, contains 2,500 figures, all carved after the shaft was set up, and these were discovered by Professor Semper to have been originally brilliantly coloured and gilt. He says in his well-known essay on Polychromy in Architecture, "the Trajan column, which I have examined, retains traces of colour and gilding; the entire column had been once covered with a thick coating of colour, in which I recognised green, blue, and yellow; but it is probable that this last was the remains of the gilding." The top of the column was reached by 185 steps of a spiral staircase, which were only roughly hewn out of the block before fixing and finished in position; and at the top, near the doorway of exit, are scribbled, in quite modern fashion, the names of many who had climbed so high, the earliest dating from the year 663.

The Column of Marcus Aurelius Antoninus was erected in 174, or sixty years after that of Trajan, of which it is a distinct imitation. It commemorates the Emperor's victories over the Quadi and Marcomanni, Teutonic barbarians of his period; and the events in his campaigns against them are shown in the sculpture which winds round

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the column in a spiral band in higher relief than the work on the earlier column, and which was probably coloured in the same manner; and it seems almost certain that it stood in a small courtyard, from the surrounding buildings of which the details could be viewed. It was known as the Columna Centenaria because the shaft, base and capital

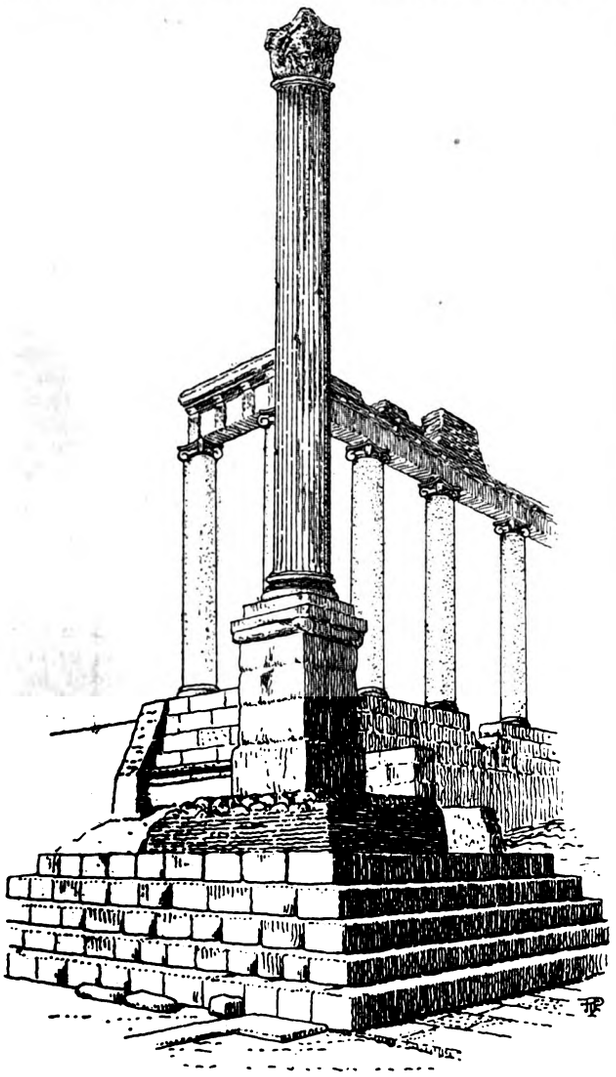


FIG. 4.—COLUMN OF PHOCAS IN THE FORUM ROMANUM.

together were 100 Roman feet in height; but was more generally spoken of as the Antonine, from a mistaken idea in the Middle Ages that it was really the column of Antoninus Pius. Its present height, exclusive of the modern pedestal, is 122 feet 8 inches, and its external diameter is 11 feet 6 inches. The summit, which was a great attraction to mediæval pilgrims, is reached by 203 steps which are lighted by 56 loopholes, each towards a cardinal point, but cleverly concealed by the sculpture; and it is through these loopholes that cracks have formed, and, developing, threatened the stability of the structure.

By the end of the sixteenth century the column had become in so ruinous a condition that its fall seemed to be imminent. The City Council repeatedly held discussions on the subject and more than once employed commissioners to report upon the subject; and it was evidently saved from the fate with which it was threatened by Sixtus V.'s happy discovery that it and Trajan's column also formed first-rate positions for religious statues, and he asked Domenico Fontana's opinion on the subject. He quite agreed with the Pope's idea for the conversion of such Pagan monuments, and he says in his report that "the column of the supreme and best of all Emperors should be dedicated to Petrus, the prince of the apostles, and that of the Emperor-philosopher Marcus Aurelius to the philosophic Apostle Paulus." The Pope therefore instructed the architect to carry the work into execution, although he had already stated that the building "was, partly by age and partly having been burnt by the barbarians, reduced to such a state that it seemed impossible rather than difficult to restore it. Wide cracks rent across the surface, which also offered alarming holes." Nevertheless Sixtus V. was not a man to be baulked in his scheme, nor was the man who had raised the Vatican Obelisk to be daunted by a difficulty; so he built up a circular scaffold to the top, and with marble from the Septizonium, which the Pope had turned into a quarry, he filled in all the holes and cracks, piecing out the sculpture as best he was able, and set about erecting the statue on the top.

Whence the bronze came from for the great image seems uncertain, as sufficient of the material had to be sought for throughout Rome, and it is said that the bronze doors of Sant' Agnese were threatened, but were left to meet their fate later on; and it appears probable that an ancient bronze pilaster of the Pantheon was made to serve.

The condition of the column before Fontana took it in hand is shown in our sketch (fig. 2), taken from an old engraving, which shows not only the great defects in the shaft, but the state that the ancient pedestal had got into denuded of most of the sculptured decoration that doubtless once encased it. The level of the pavement of the square was originally 13 feet lower than the present, and, though Fontana is credited with the design of the present pedestal, there seems some doubt in the matter. On the walls of the Vatican Library is a contemporary fresco showing the column surmounted by the statue of St. Paul and the pedestal in two stages, though different in design from that shown in fig. 2, and quite different to that now existing and showing in fig. 3. The explanation appears to be that the raising of the street level has occurred since the picture was painted and that the lower portion of Fontana's work has been buried, while the sculptured decorations shown on the upper part either were never executed or have been subsequently pared off. So far as his repairs to the shaft are concerned, it is quite possible that the recent earthquake has loosened or even shaken out some of his inserted marble, and the state of the column be no worse than it was when he took it in hand; and what he did once may certainly be done again. The cost of the repairs amounted to 9,284 scudi.

It is interesting to know that the repairs were con-



FIG. 5.—COLUMN FROM THE BASILICA OF CONSTANTINE NOW BEFORE STA MARIA MAGGIORE.

sidered to be quite satisfactory by the Pope, and in October 1588 the column was solemnly inaugurated. A patriarch, after celebrating Mass in San Lorenzo, headed a procession to the square, accompanied by the Papal

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singers, to bless the column and its statue. Probably it had already been exorcised, as had happened in the previous November to the column of Trajan.

The column of Antoninus Pius met with a more unhappy fate, but when discovered in 1703 it was in a fairly perfect condition, though fallen down and buried beneath ruins. The shaft was a monolith of red granite nearly 50 feet high, which had stood on a richly carved marble pedestal; and Clement XI. instructed his architect, Carlo Fontana, to re-erect it on Monte Citorio. During the operations it was stored in a wooden shed, which, catching on fire, so damaged the shaft that it could not be reused; but the pedestal with high reliefs representing the apotheosis of Antoninus and Faustina was restored, and is now in the Vatican gardens.

The column of Phocas in the Forum (fig. 4) was, until 1816, when its base was excavated, always supposed to be the fragment of a ruined temple; but the inscription then discovered showed that it had been set up as late as 608 by the Exarch Smaragdus in honour of the Emperor Phocas, and was evidently not the work of that period, but had been removed from an earlier, and probably destroyed, edifice.

Of the two columns raised in modern times by the Popes the most important is the one standing in front of Sta. Maria Maggiore (fig. 5), which once was one of the great eight pillars supporting the vault of Constantine's Basilica in the Forum, and stood 62 feet high. It was taken down by order of Paul V. and set up by Carlo Maderno, who designed its base and capital; while the bronze statue of the Virgin which surmounts it is by the sculptor Bertolot. The other column is the one erected by Pio Nono in the Piazza di Spagna in front of the Propaganda. It is a monolith of Cipollino, 42 feet long and 4 feet 9 inches in diameter; and it does not appear to have been before used, although discovered in some excavations made on Monte Citorio. But it may have been rejected for some defects at the lower end now concealed by the modern ornamental bronze work.

Some superstitious people may be struck by the coincidence of the damage this earthquake has done to the Church of St. Agatha of the Goths—S. Agata dei Goti—and to the sculptured representation of the Roman Emperor's triumph over the German hordes of his time. But the omens are eminently favourable, the former indicating German defeat, and the second calling on the Italians of to-day to take a hand, with the rest of civilisation, in the completion of the work which Marcus Aurelius did not quite accomplish.

PASSED BY THE CENSOR?

By NON-IGNOTUS.

IT would seem that poets are not alone in enjoying the privilege of licence and of coining fanciful words and phrases that exaggerate whatever they may be writing about. They have, during the last five months, enjoyed the comradeship of Press reporters and Press photographers, and a fairly nice hash of things some of these good gentlemen of the Press have made of facts and names, little suspecting that some of the readers of their illustrated literature happen to know the localities named and the buildings illustrated better than themselves, on the spot though the P.r.'s and the P.p.'s may have been when despatching their effusions to England for our consumption.

As to the rampant geographical Press misstatements and misprints of place-names (such as the dubbing of Belgian seacoast towns as cities and mere straggling villages as towns, and the gratuitous raising of parish churches into cathedrals, and the mixing up of places in South Belgium with those of North Belgium in alleged telegrams from Holland), the Press agencies have also shown themselves to be masters in the art of Press licence (or Press lie-sense!) and must share the blame accordingly (the employers being responsible for the work of their employees), for their transcribers of telegrams from abroad, in their sapience, have wildly jumped at the most idiotic conclusions on seeing, for instance, in a message from Holland the name of Thourout (near Bruges), and decided on their own that the man at the other end of the wire must mean Turnhout (near the Dutch frontier)

Heyst, too, which is on the coast, is reported to be "near Malines," but the Heyst "near Malines," but nearer Aerschot, is Heyst-op-den-Berg, a straggling village, and not the place on the coast defended by the Germans, where nobody is allowed to enter, nor to depart thence, under penalty of death! The transcriber of the Heyst "near Malines" telegram clearly took, as he has frequently done during the war, an unwarrantable liberty with the original message, and jumped at a conclusion which was as impossible and intangible as it was ridiculous, or pretended he knew better than the telegraphist on the spot.

Almost on a par is "Peverloo, near Liège," in a transcription of a telegram in one of the papers this week. We can find no such place on our very complete map of Belgium, but we know of Beverloo, about half-way between Diest and Moll, which is the Belgian Aldershot.

But one illustrated daily has been surpassing itself in its eagerness to be written by the best authors and illustrated by the best artists, yet anxious not to "give away" any military secrets. On that score the editor would appear, in an instance which we give a few lines lower down, to be on very safe ground.

The paper has been tripped up for calling St. Peter's at Louvain a cathedral; it has twice been called to book for stating, under pictures of the remains of St. Giles's Church, Termonde, that they showed "the principal church which has been entirely destroyed" (which is, apparently, not a fact, and even St. Giles's tower still stands). The principal church is that of Notre Dame, and that information was imparted to the editor on the first misstatement. Then came, among other samples of "licence," a picture of our gracious King conferring with Albert Cœur de Lion, the great King of valiant little Belgium, at a review of King Albert's troops "in a city in Northern France near the Frontier."

We were unaware that Furnes was a city, and in Northern France to boot. However, the grotesque error, on being pointed out to the editor, was corrected under a small reproduction in the weekly issue. Good!

About that time came a view of the bottom part of the transept of a brick and limestone bad Gothic modern village church, whose ruined cupola (*sic*) was stated to be in the *débris* between the transept and the house beyond in the picture. We readers were asked to believe the sacred edifice (of which the part was depicted) was "a cathedral in the North of France!"

We failed absolutely to recognise the magnificent building, nor did we remember any Gothic cathedral in that part of Europe which was near the enemy's guns and which had, till then, been graced by a cupola.

With regard to cathedrals in Northern France, the transcriber of a telegram given in the same paper attributes a phenomenal feat to the Germans. He declares that, among other damage to Soissons Cathedral, they have destroyed the spire there! If that is the case, the spire must have been put up within the last few days, as a view of the cathedral was given in that paper only a few days previously, and a truncated tower is shown as the only thing there in the way of a steeple. But, there! the Censor—so knowing—has permitted the publication of the telegram, and *he* ought to know, as well as does the transcriber!

At the end of 1914, on December 30, the paper gave a startling picture of the roofless interior of a long and very narrow church which had had a central tower, and of which only the lower part of the eastern face remained, balanced over the chancel arch. This poor dilapidated shell was stated to be "German's legacy to Belgium" for the New Year, and to be the remains of a church "in a small town in Belgium."

On being appealed to to state where it was, the editor has maintained a most diplomatic and dignified silence. Evidently the secret was too important a one to divulge, even in the weekly issue which followed.

We have also seen—it was submitted to us for the correct title to be given—a photograph of the Grand Place at Termonde, looking towards the Corps de Gardes ruins and showing the blackened shell of the Hôtel de la Bourse (the name was just visible through the smoke marks between the windows). The knowing party who supplied it to the editor (not the one we have just been dealing with, but of an important weekly) had stuck on the back of it a typewritten label bearing the words, "Termonde: Ruins of the Railway Hotel."

That was too much for us, and we informed the editor that his readers would be gulled if that were allowed to pass.

That photograph did not get inserted.

We presume the Official Blue-penciller to the War Office passed all the above samples of licence as part of his day's work, and that he knows every inch of Belgium and North France, and the name and status of every city, town, village, and hamlet therein, and their correct spelling and accurate location.

If so, we bow to his sapient majesty!

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But the palm for misstatements cannot, surely, be rightly given to the representatives of Belgium who have just published their report on German atrocities in Belgium. They should know better than to refer to the "Destruction of the Cathedrals of Malines and Termonde." But the signed English translation of the report makes them say such an extraordinary parody of truth as regards Termonde.

Clearly there must be in that translation a lot of verbal alterations by the person or Press agency that supplied the report to the English newspapers. Verbal alterations are always a dangerous game in order not to give away some great military secret. If that is the case, we must reluctantly grin and bear it. We have a lot to thank this war—or the Kaiser—for.

INSTITUTE OF SANITARY ENGINEERS.

MR. A. P. I. COTTERELL, M.Inst.C.E., F.R.San.I., the President of the Institute of Sanitary Engineers, gave his Presidential Address at Caxton Hall, Westminster, on Wednesday, January 6, of which the following is an abstract:—

Ours is no mean profession. Whether in peace or in war, year by year witnesses to its growing importance. The day when the sanitary reformer was brushed aside as an impossible idealist is long since past. Sanitation is now recognised as essential to the world's well-being and those who practise it as an integral and indeed to a large extent as an official part of the nation. It has saved the lives of hundreds of thousands, and has built up strong manhoods where formerly weakness and disease would have flourished. Man is a gregarious animal, and whether in city or village we are becoming more and more dependent upon efficient sanitation. We might even call Sanitary Engineering the handmaid of civilisation, so necessary is she wherever civilisation spreads.

I should like to briefly review some of the progress made by Sanitary Engineering in our own land during the last four or five decades. There have been astonishing changes. Forty years ago few beside the larger towns had an adequate water supply, and the conditions even in some of these left much to be desired. Now, almost every town and many villages have their public water supply; the larger towns, concurrently with an influx of population, have improved theirs out of recognition; lakes have been constructed or tapped to provide for the wants of densely populated cities, whilst many others are drawing far afield upon the resources of the country. London stands by herself. She has enormously increased her reservoir accommodation and is engaged in still further extensions for the purpose of utilising to the full her present sources of supply. Incidentally, by means of storage she has also succeeded in improving the quality of the water.

In the department of sewerage and sewage disposal even greater advance has been made than in water supply. In one sense the art of sewage disposal may be said to have been created in the last forty years. I do not mean that before this period very little was known of the principles of sewage disposal, for I am one who holds that the past has much more to teach us than we are generally ready to admit. But there has been material advance with more and more confident step. Forty years ago only the larger towns possessed a sewerage system, now many of our villages are provided. Then, the disposal of sewage was at the best embryonic except in a few enlightened instances, now we can design disposal works with practical certainty that they will fulfil the purpose intended if properly looked after.

It is in the utilisation of sludge that the greatest activity is at present being shown. After the disappointments and losses that have been the lot of investigators in years past, it is not surprising that a few years ago the search was almost given up and every effort made to get rid of sludge in the quickest and cheapest possible way.

The notable success of Bradford in transforming the greasy constituents of its sewage into a source of revenue has had an effect in drawing attention once more to this wasted source of national revenue. At Bradford, I understand, the recovery of fats produces so large an income that much of the annual upkeep of the works is thereby paid for, and the authorities go out of their way to encourage the introduction of trade wastes from the factories into the sewers.

Another scheme for the treatment of sewage sludge was described by my predecessor in this chair. It is in operation at Dublin, and is, I understand, to be introduced shortly on a large scale at Birmingham. Mr. Watson described the process so fully in his Address that I need not again particularise. Suffice it to say that it consists of two main sections:—

1. Fermentation of the crude sludge by the addition of yeast with separation of the resultant water, which in this case is drawn from underneath the thick scum formed by the fermentation.

2. Drying the sludge after the incorporation of phosphates and potash and its conversion into a fertiliser.

I have had occasion recently to examine professionally a method of sludge utilisation that is being worked by a company who have lately erected a plant at Wimbledon capable of dealing with twenty-five tons of sludge per day. This undertaking boldly sets out to recover the valuable constituents of the sludge, and claims that effective uses can be found for all of them.

Manchester has just brought to our notice still another process. It has several points of novelty in that it proposes so to perfect the preliminary or tank treatment of sewage as to do without filtration altogether.

I ought not to omit mention of the notable work done by the Royal Commission on Sewage Disposal. They have been a long time about it, but they have certainly left their impress on the problem. Much of their work may have been merely to systematise existing methods, but their last Report strikes out much more boldly, in that it proposes to resume the discarded method of purification by dilution and to introduce sewage into the streams in a more or less crude form, under scientific control, relying upon the previously ascertained exygenating resources of the river to complete the purification.

I ought not to allow this portion of my subject to go by without drawing attention to the great advance that has taken place in the disposal of refuse. Those appalling heaps of rubbish that used to disgrace the thickly populated portions of our cities are not so numerous as they used to be. One of the finest sanitary developments of modern times has been the institution of the destructor. We have come back to the ancestral use of fire for the disposal of our refuse. May it be our fortune to see it extend to the disposal of our dead and so revert to a practice in which our forefathers were wiser than we.

I am going to ask you to consider with me the problem of housing in so far as it affects the poorer classes of our people both in the city and in the country. I submit that it is a subject not only germane to the aims of the Institute, but one in which we have a direct interest. We touch it as citizens, but we also come in contact with it in our profession. It will fall to the lot of many to assist in the solution of the problem, and just as we have had our part in improving the sanitation of the country in the past, so we ought also to find a place in the future in helping toward the provision of better houses for the people.

There is another way of looking at the subject. Whilst we have been engaged in works of water supply and sewerage, and whilst sanitary services have been improved, good as all these are, they have in a sense made it more difficult for the small householder to secure a satisfactory home. For, as a direct consequence of such outlay, the rents are bound to rise, and unless wages rise concurrently with the growing rent and cost of living the last state of the cottager is worse than the first.

Every city has its slums and the countryside its mean dwellings. I am glad to admit that the conditions both of the town dweller and of the countryman have vastly improved under the same impetus that has brought about such sanitary progress in other directions. In the towns the Housing Acts and municipal diligence, coupled with private example, have either abolished many slum areas or so altered the dwellings of those who lived there as to make them moderately habitable.

Since the passing of the Housing Act of 1909 we have entered a new era. Many localities are taking advantage of the new powers placed in their hands with admirable results, and are endeavouring to make up for the deficiencies of former days.

It may reasonably be asked whether this course does not involve a serious interference with private enterprise, and whether the public provision of houses should only be encouraged as a strictly temporary measure. For my own part I deprecate State interference if the object aimed at can be obtained in another way. But it is not likely that the public control of housing will ever be relaxed, although it may be that private enterprise will so rise to the occasion that public outlay can be reduced. Yet I am inclined to think that public expenditure in housing will continue for

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some time to come. It is a heavy responsibility, of course, for a locality to undertake, but there is security for the outlay at least as good as upon sewerage and water works which, with the abandonment of the houses served, would become of very little value.

We need not conclude that insanitary houses are always due to the neglect of an absentee landlord. It is far too often the small owner or the actual occupier who is also the owner whose property is in such a deplorable condition. The difficulty is intensified when such a cottage is both owned and occupied by a poor widow whose little all is in the property, and who really has not the means to carry out the necessary sanitary alterations.

As regards overcrowding or insufficiency of accommodation, it sometimes arises through the influx into the locality, either permanently or temporarily, of some of the better-class town dwellers who like to have a country cottage to retire to, but who do not realise that this makes one house the less for the indigenous population.

Any traveller by some of our main lines out of London, looking through the windows, must pity the circumstances of the dwellers in the mean streets and dirty courts that he passes. Something of the same kind of thing can be seen in many provincial towns where the railway runs in embankment or on viaduct.

There are other problems mixed up with that of housing when the poorest poor are considered. There is the question of utterly insufficient wages to meet an economic rent, of inability to rise out of the slough in which they have lived so long, of want of resource, and of a love for a herded life in narrow courts or congested buildings.

The able investigations carried out by Booth and Rowntree, and the noble lives lived by Octavia Hill and others like her, have probably done more than anything else to rouse the public conscience in the matter of urban housing. The nation had to do it when it came to know the facts. We can gladly acknowledge the efforts made by London and by many of our large cities to house some of their population under better conditions. Liverpool is shouldering a rate of 1½*d.* in the £ in order to house at rents of from 9½*d.* to 2*s.* 9*d.* per week people unhoused from insanitary areas who were utterly unable to rent a decent dwelling. The Corporation declare that it pays them handsomely. Typhus has practically disappeared, the typhoid death rate has fallen nearly 75 per cent. in ten years, the mortality rate has been reduced from 50 to 27 per 1,000, public-houses have been swept away, and the police are losing their usual employment. Colonel Kyffin-Taylor, M.P., the chairman of the Corporation Housing Committee, says: "Some of the tenants in our buildings so improve their position that they ask for and obtain our better houses, and some get well to do and go further out into houses built by private enterprise. It is untrue to say that these people will make slums of any place they go to. It is easy for folk who live in charming houses, wear lovely clothes, and have lovely gardens, to say that environment makes no difference. Liverpool says that in its experience that statement is wholly untrue. Fifteen years ago the people objected to being disturbed. Now some of them want to be disturbed, and are anxiously waiting their turn, and those whom we have rehoused have learned to realise and value their surroundings to such an extent that money that previously went in one direction now goes in another, and they have new aspirations, new ideals, new hopes."

There is one part of the United Kingdom where very notable progress has been made in housing. It is where perhaps one would least have expected to find it—viz., in the rural districts of Ireland. These changes have been brought about by a wise administration of the law under successive ministries. From 1883 to the end of 1912 no less than 42,640 cottages were built by 211 out of the 213 rural district councils of Ireland at an average cost, including buildings, roads and land, of £185 per house, and containing usually one living room and three bedrooms. Of the above number more than half have been erected since 1906. It has been possible to carry out this great work because the State undertook a substantial contribution towards the cost, amounting practically to 36 per cent., and the houses built can therefore be let at low rents within the compass of the wages of those who inhabit them.

In England changes are also taking place. The erection of better cottages in urban and rural districts, and the development of estates to rehouse congested areas, is also proceeding. I ask that it should not be allowed to slacken during this time of stress and of prodigal expenditure in other directions. The fact that immediately after the declaration of war an Act was passed through all its stages in one day, providing for the issue of £4,000,000 for housing purposes, although not very much when compared with the huge sums now being spent by the nation, shows the importance attached by the legislature to the subject.

The cost of building naturally varies in different parts of the country, and according to the accommodation considered necessary. The houses already erected in districts in England that have undertaken housing appear to run from £300 to £160 per house. A concrete cottage exhibition held recently produced designs for buildings containing a living-room, scullery with offices, and three bedrooms for £125, exclusive of builder's profit, sanitary fittings and drainage, fences or land, which, if added, would total up to much the same outlay as ordinary buildings. I think, therefore, that we may take these as rock-bottom prices.

Under the favourable loan conditions hitherto allowed it has been found possible by local authorities to let houses of the values named at rents varying from 7*s.* to 5*s.* a week, and in a few cases rather less before a point is reached where, as in Liverpool and in Ireland, a part of the rent has to be paid by others. These are lower rents than private enterprise can possibly afford to charge even with land acquired on the same terms. The consequence must be that private house building for the poorer classes will tend to be cut out, and the onus of providing the necessary cottages will fall upon the local authority. An immediate consequence of this legislative change may easily be a shortage of houses and worse sanitary conditions unless localities are stirred up to undertake the duties now placed upon them by the State.

In these days of improved and improving traffic facilities the wider spacing of the country's workshops is not impossible. Hence I think that we can support the development of new suburbs, making them garden towns if you will, and design them for happier conditions than can ever be made of the old unhealthy areas. We can advocate also the grouping of our agriculture population in new and better cottages, so that life both in city and in country may be more like what it ought to be.

There is another feature of housing that must not be overlooked. The working man of to-day now needs and is entitled to demand better amenities and greater conveniences than were considered necessary forty or fifty years ago. He has been educated by order of the State, and his outlook on life has been completely altered thereby. All this has brought about a standard of comfort unknown to previous generations.

Then again, sanitary teaching pressed home year after year has made us to be a cleaner nation than we were. But cleanliness cannot be got for nothing. It costs to be clean. The mother who sewed her boy up for the winter did it with the object of economy as well as the man who, according to a well-known advertisement, omitted to use soap for quite two years. It is all right to provide greater cubic space, better windows, a bath, and other sanitary conveniences, but they not only affect the first cost, they increase the annual upkeep of the tenant.

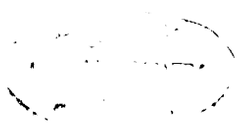
Has the wage paid kept pace with the growth of requirement? Is it not a fact that the cost of housing alone, to say nothing of other things, has outstripped the wage paid to the householder? Should the workman still be expected to spend so large a proportion of his income on rent when his family has so many other needs to be satisfied before it can fulfil its duty to the State?

It may be said that these questions might have been answered a year ago, but now that the nation is struggling for its existence all such things have to be put aside. It would be a poor victory that succeeded in overcoming other nations but failed to maintain the vitality of our own. And this is recognised. Whilst large sums are being poured out for the maintenance of the Navy and of the Army in the field, for the first time in our history, I believe, we are also caring for the wives and dependents at home. Steps have been taken and duties shouldered that cannot be entirely abandoned. It has been done because we know it is as true to-day as when Canning used the words 100 years ago:—

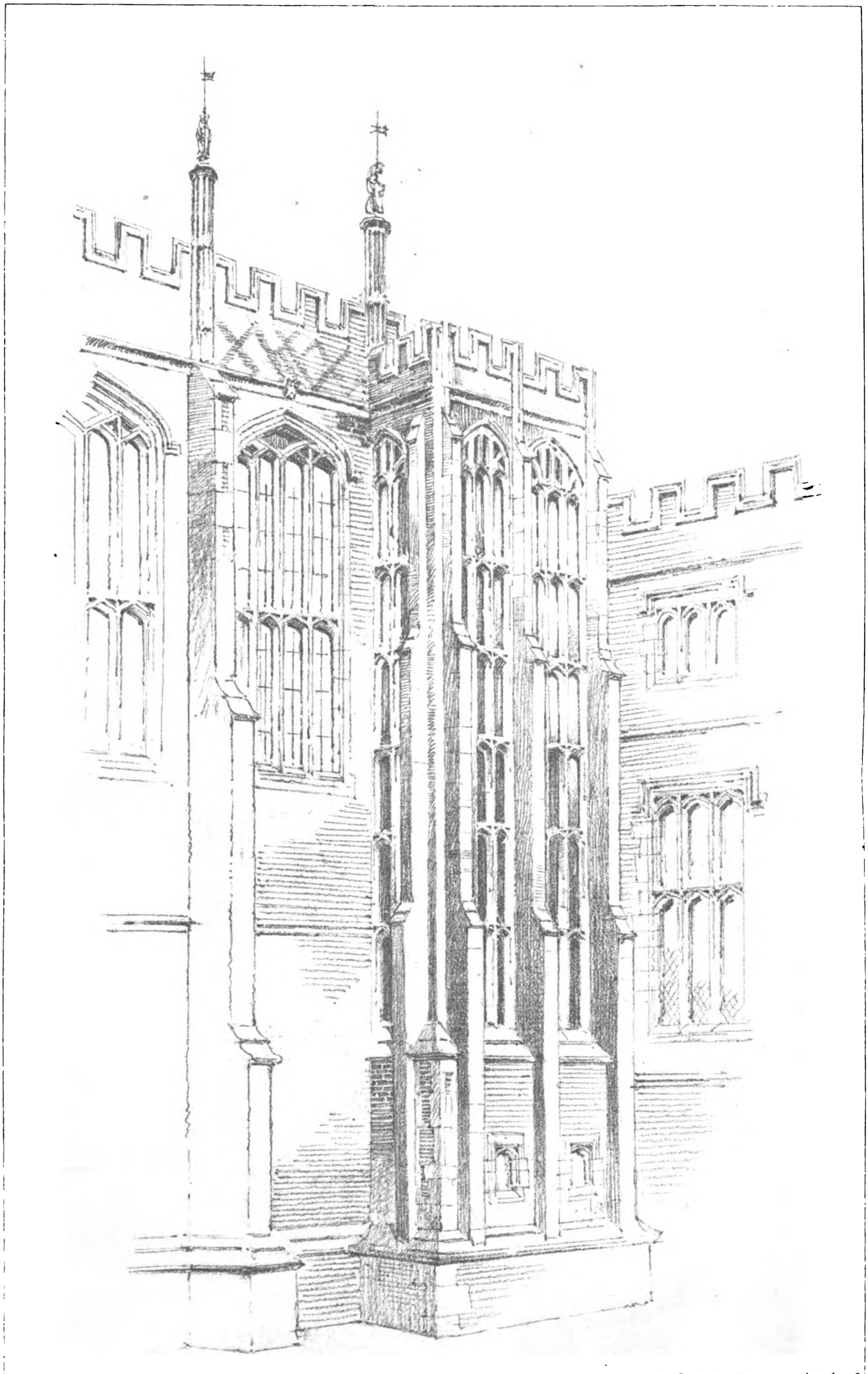
> "Princes and kings may flourish or may fade,
> A breath may blast them as a breath has made;
> But a bold peasantry, our country's pride,
> When once destroyed can never be supplied."

We can therefore never be quite the same again. We have undertaken a responsibility towards one another that should not be entirely set aside. It is an outcome of the spirit of the age—a spirit that will continue after the responsibilities raised by the war shall have passed away.

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ORIEL WINDOW TO GREAT HALL, HAMPTON COURT PALACE.



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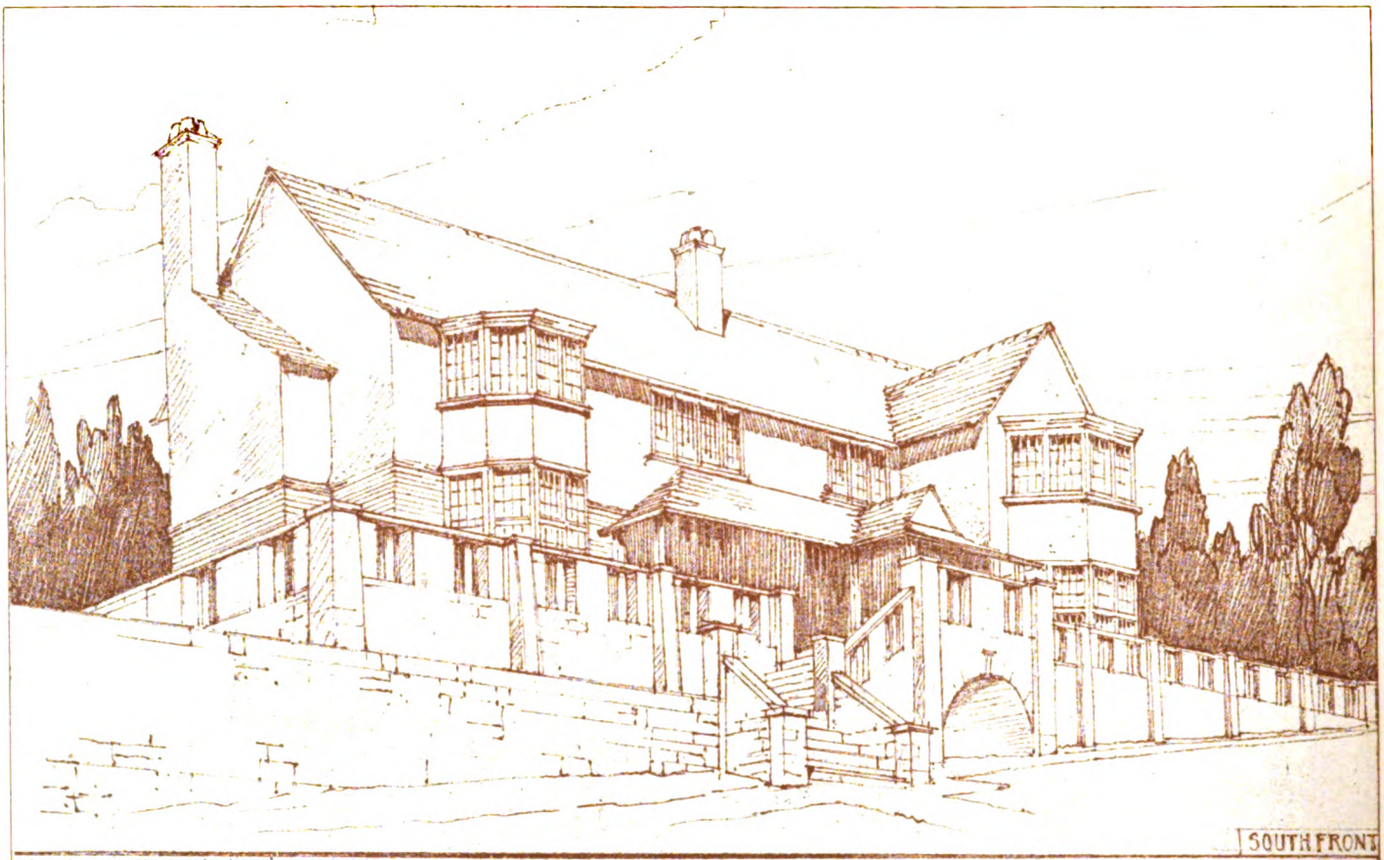
INK-PHOTO SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

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Messrs. JOHN W. SIMPSON, F.R.I.B.A. and MAXWELL AYRTON, A.R.I.B.A., Architects

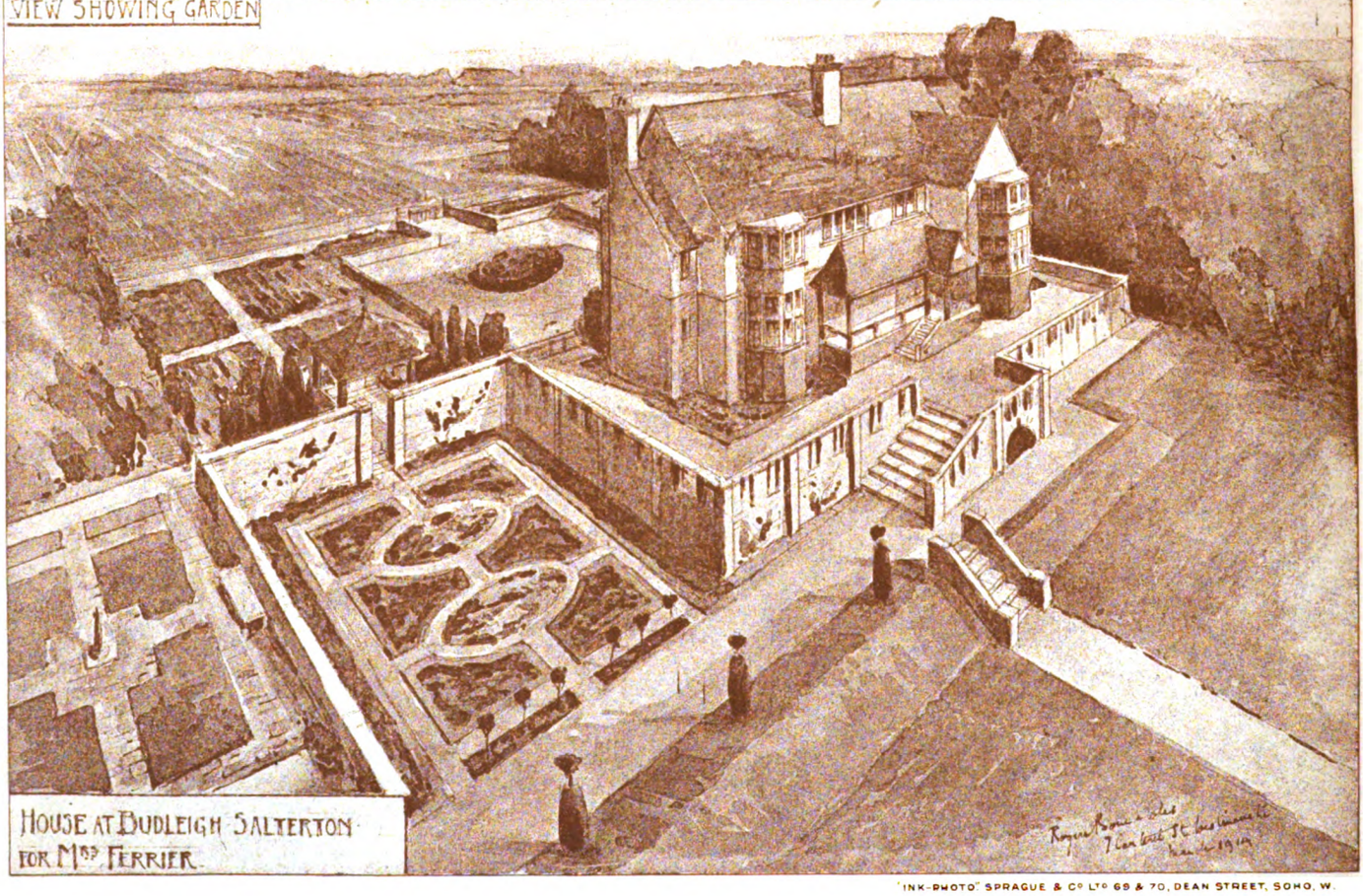
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SOUTH FRONT

VIEW SHOWING GARDEN



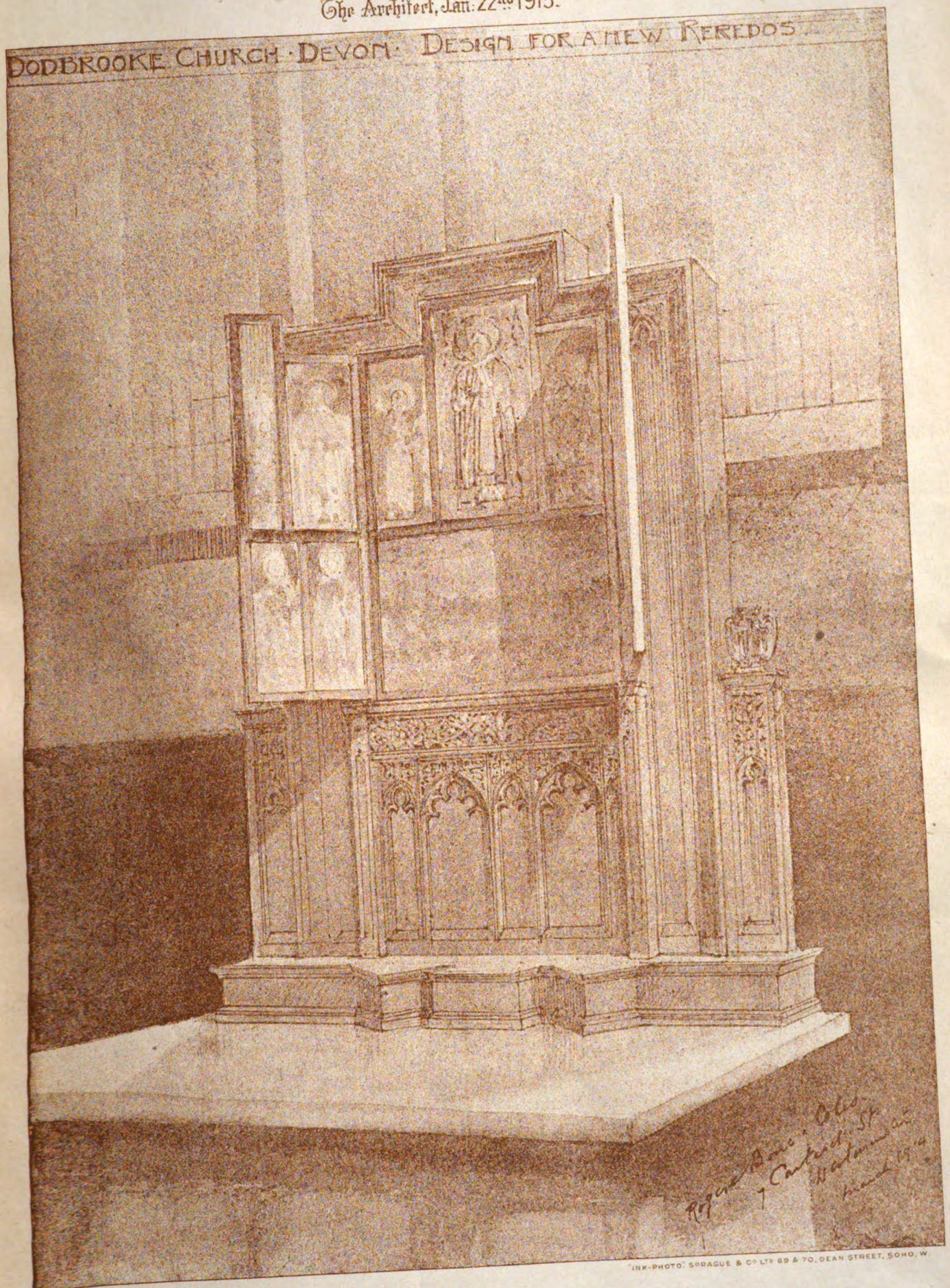
HOUSE AT BUDLEIGH SALTERTON FOR Mrs FERRIER.

"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

MESSRS. ROGERS, BONE & COLES, Architects.

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DODBROOKE CHURCH · DEVON · DESIGN FOR A NEW REREDOS.



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(Royal Academy Exhibition, 1914.)

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ST. BRIDE'S CHURCH, FLEET STREET, E.C.

From drawing by Mr. CHAS. S. CARTER

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SHEFFIELD SOCIETY OF ARCHITECTS.

AT the Sheffield University Mr. A. B. Burleigh, of York, delivered a lecture to members of the Sheffield Society of Architects and Surveyors on the 13th inst. His subject was "Castle Howard: its History and Architectural Features and its Artistic Treasures." The lecturer opened with some account as to the proper lighting of picture galleries, especially roof lighting, and spoke very highly of the arrangements in the galleries of Castle Howard. He dealt at length with the history of the family, and with the variety of Vanbrugh's genius. He went into considerable detail respecting the plans of the famous Yorkshire mansion, and its mausoleum, whose sheer magnificence made Horace Walpole declare that "it almost tempted him to be buried alive!" The paintings and other treasures were described, the whole lecture being illustrated by limelight views taken from photographs secured by the lecturer, to whom a hearty vote of thanks was accorded at the close.

TESTS OF BOND BETWEEN CONCRETE AND STEEL.*

(Concluded from last week.)

(41) THE mean computed values for bond stresses in the six-foot beams in the series of 1911 and 1912 were as given below. All beams were of 1-2-4 concrete, tested at two to eight months by loads applied at the one-third points of the span. Stresses are given in pounds per square inch.

	Number of Tests	First End Slip of Bar	End Slip of 0.001 in.	Maximum Bond Stress
1 and 1¼-inch plain round	28	245	340	375
¾-inch plain round . .	3	186	242	274
⅝-inch plain round . .	3	172	235	255
1-inch plain square . .	6	190	248	278
1-inch twisted square .	3	222	289	337
1⅛-inch corrugated round	9	251	360	488

(42) In the beams reinforced with plain bars end slip begins at 67 per cent. of the maximum bond resistance; for the corrugated rounds this ratio is 51 per cent., and for the twisted squares 66 per cent.

(43) The bond unit resistance in beams reinforced with plain square bars, computed on the superficial area of the bar, was about 75 per cent. of that for similar beams reinforced with plain round bars of similar size.

(44) Beams reinforced with twisted square bars gave values at small slips about 85 per cent. of those found for plain rounds. At the maximum load, the bond-unit stress with the twisted bars was 90 per cent. of that with plain round bars of similar size.

(45) In the beams reinforced with 1⅛-inch corrugated rounds, slip of the end of the bar was observed at about the same bond stress as in the plain bars of comparable size. At an end slip of 0.001 inch, the corrugated bars gave a bond resistance about 6 per cent. higher and at the maximum load about 30 per cent. higher than the plain rounds.

(46) The beams in which the longitudinal reinforcement consisted of three or four bars smaller than those used in most of the tests gave bond stresses which, according to the usual method of computation, were about 70 per cent. of the stresses obtained in the beams reinforced with a single bar of large size. The progressive opening of cracks with increase in load was well shown in these tests. These beams showed cracks nearer the ends than usual. The distances of the outermost cracks from the ends of the beams suggest that the unbroken length of embedment has an important bearing on the maximum loads which the beams may be expected to carry before failing by bond. It seems probable that the lower computed bond stresses in these tests are due to errors in the assumptions made as to the distribution of bond stress and not to actual differences of bond resistance in the bars of different size.

(47) The tests on beams with the loads placed in different positions with respect to the span gave little variation in bond resistance during the early stages of the tests. The maximum bond resistances increased rapidly as the load approached the supports. These tests indicate that the variation in the maximum bond stresses must be due to the presence of other than normal beam action.

(48) Nearly all the beams tested on span lengths of 7 to 10 feet failed by tension in the steel and did not develop the maximum bond resistance, although high bond stresses were obtained. The bond stress corresponding to first end slip of bar did not vary much with the span length.

(49) The bond stresses developed in the beam tests indicate that with beams of the same cross-section the bond stresses are distributed in the same way during the early stages of the test in beams varying widely in span length and loading. During the later stages of the test the distribution of bond stress seems to depend largely upon the conditions of stress in the concrete through the region of the span where beam bond stresses are high. The distribution of bond stresses in beams of different cross-section apparently varies with the relative dimensions of the beam and the reinforcing bars.

(50) The use of auxiliary tensile reinforcement in the outer thirds of the beam served to modify the distribution of bond stress during the early stages of the test, but did not have any influence on the maximum bond resistance. While the auxiliary bars seemed to prevent the opening of outer cracks, the tests indicate that interior cracks which did not appear on the surface of the beam may have opened to an extent that permitted the same distribution of bond stress as was found in other tests.

(51) Increasing the thickness of the concrete below the reinforcing bars beyond the depth usually employed caused a very large increase in the resistance to bond and web stresses. The added stiffness of the beam and the increased flexural strength through the outer thirds of the span prevented the formation of cracks in these regions. In the other beam tests such cracks were found to interrupt the continuity of bond action and to be an important factor in producing lower average bond resistances.

(52) Increasing the length of overhang of the ends of the beam beyond the support did not increase the resistance to web stresses as indicated by the opening of outer cracks, but it had an influence on the bond resistance. The bond resistance at first end slip was greater in the beams with the longer overhang. The maximum bond resistance was materially increased by the additional overhang.

(53) In the reinforced concrete beams it was found that very small amounts of slip at the ends of the bar represented critical conditions of bond stress. For beams failing in bond the load at an end slip of 0.001 inch was 89 per cent. to 94 per cent. of the maximum load found in beams reinforced with plain bars, and 79 per cent. of the maximum load for similar beams reinforced with corrugated bars. As soon as slip of bar became general, other conditions were introduced which soon caused the failure of the beam.

(54) The bond stresses developed in a reinforced concrete beam by a load applied as in these tests varies widely over the region in which beam bond stresses are present. High bond stresses are developed just outside the load points at comparatively low loads. The load which first developed a bond stress nearly equal to the maximum bond resistance in the region of beam bond stresses produced a stress near the support which was not more than about 15 to 40 per cent. of the maximum bond resistance. As the load is increased, the region of the high bond stress is thrown nearer and nearer the support, and at the same time the bond stress over the region just outside the load point becomes steadily smaller. This indicates a piecemeal development of the maximum bond stress as the load is increased. The actual bond stresses in certain tests varied from less than one-half to more than twice the average bond resistance computed in the usual manner.

(55) Slip of bar in a reinforced concrete beam has a marked influence in increasing the centre deflection during the later stages of loading.

(56) The comparison of the bond stresses developed in beams and in pull-out specimens from the same materials is of interest. Such a comparison should be made for similar amounts of slip. In the pull-out tests the maximum bond resistance came at a slip of about 0.01 inch for plain bars. The mean bond resistance for the deformed bars tested was not materially different from that of the plain bars until a slip of about 0.01 inch was developed; with a continuation of slip the projections came into action, and with much larger slip high bond stresses were developed. The beam tests showed that about 79 to 94 per cent. of the maximum bond resistance was being developed when the bar had slipped 0.001 inch at the free end; hence the bond stress developed at an end slip of 0.001 inch was used as a basis

* **Abstract from Bulletin of the University of Illinois, U.S.A., on "Tests of Bond between Concrete and Steel." By Duff A. Abrams.**

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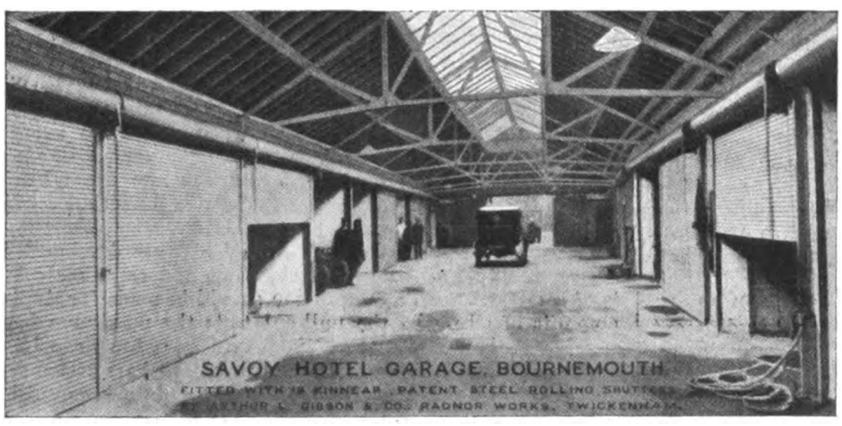
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of the principal comparisons in the pull-out tests. However, it is recognised that, under certain conditions, the stresses developed at larger amounts of slip may have an important bearing on the effective bond resistance of the bar.

(57) The pull-out tests and beam tests gave nearly identical bond stresses for similar amounts of slip in many groups of tests, but it seems that this was the result of a certain accidental combination of dimensions in the two forms of specimens and did not indicate that the computed stresses in the beams were the correct stresses. However, it is believed that a properly designed pull-out test does give the correct value of bond resistance, and gives values which probably closely represent the bond stresses which actually exist in a beam or other member as slipping is produced from point to point along the bar. The relative position of the bar during moulding may be expected to influence the values of bond resistance found in the tests.

(58) A properly made pull-out test on a specimen of correct design is a valuable aid in determining the bond resistance of reinforcing steel in concrete, if due consideration is given to the load-slip relation. The tensile stress in the bar should be kept well below the elastic limit. Best results will be obtained by using a relatively short embedment. An embedment of eight diameters is recommended.

(59) A working bond stress equal to 4 per cent. of the compressive strength of the concrete tested in the form of 8-inch by 16-inch cylinders at the age of twenty-eight days (equivalent to 80 lb. per square inch in concrete having a compressive strength of 2,000 lb. per square inch) is as high a stress as should be used. This stress is equivalent to about one-third that causing first slip of bar, and one-fifth of the maximum bond resistance of plain round bars as determined from pull-out tests. The use of deformed bars of proper design may be expected to guard against local deficiencies in bond resistance due to poor workmanship, and their presence may properly be considered as an additional safeguard against ultimate failure by bond. However, it does not seem wise to place the working bond stress for deformed bars higher than that used for plain bars.

Concluding Remarks.—The tests described in this bulletin have thrown considerable light on the value of bond resistance and the distribution of bond stress for a wide range of conditions in both beam and pull-out tests. It may not be expected that all of the results indicated can be applied without modification to members in which the conditions of stress differ widely from those present in the tests.

Most of the foregoing discussions and conclusions are based on comparisons involving the load-slip relations. In a few of the tests the bond stress was determined from a study of the variations in the tensile stress in the reinforcing bar. The latter method furnishes a much more direct means of measuring the bond stress, but it has been available only since the recent development of a non-fixed extensometer. Additional tests are planned which are expected to give further information on this subject.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.
Bedford.—Workhouse Infirmary: sick wards, for B.G. (£6,800).

BERKSHIRE.
Reading.—No. 15 Church Street, Caversham. Mr. G. Millar, architect.

CHESHIRE.
Stockport.—Proposed Council schools at Higher Brinkway, Great Moor and Mid Reddish.

CORNWALL.
Falmouth.—Infectious diseases hut and disinfecting chamber, for H.M. War Office.

DERBYSHIRE.
Shuttlewood.—Mixed Council school for 320 places.

DEVON.
Babbacombe.—Proposed fourteen houses, near St. Anne's Terrace, for Mr. Wiltshire.
Plymouth.—Asylum: extensions. Messrs. Thornely (F.R.I.B.A.), Rooke, and Barron, architects, 11 The Crescent.
Teigngrace.—Church school.

DORSET.
Portland.—Six workmen's cottages, St. Martin's Estate (£1,400).

DURHAM.
Sunderland.—Bede Collegiate school (£30,000).

ESSEX.
Brentwood.—Proposed isolation hospital.
Maldon.—Caretaker's lodge and lavatories at the recreation ground. Council surveyor.
Pattiswick and Rayne.—Proposed working-class dwellings, for Braintree R.D.C.

GLOUCESTERSHIRE.
Avonmouth.—Cold store and general warehouse, E. Wharf, Royal Edward Dock.
Cheltenham.—Public elementary school, Charlton Kings.
Over.—Tuberculosis hospital.
Pebworth.—House. Messrs. Knight & Hebery, architects, 5 Rother Street, Stratford-on-Avon.

HAMPSHIRE.
Aldershot.—Four workmen's dwellings (£800).

HEREFORDSHIRE.
Hereford.—Business premises, Commercial Street. Messrs. Groome (A.R.I.B.A.) & Bettington, architects, Palace Chambers, King Street.

HERTFORDSHIRE.
St. Albans.—Proposed Council roadmen's cottages, Potter's Crouch.

KENT.
Broadstairs.—Town depôt (£2,700).
Mersham.—Smallpox hospital, for East Ashford R.D.C.
Tenterden.—Proposed Council school.

LANCASHIRE.
Ashton-under-Lyne.—Secondary school (£20,000).
Barrow-in-Furness.—Four houses, Longreins Road. Messrs. J. H. Neal & Son, Ltd., builders, Abbey Road Bridge.
Forty-five houses, Dartmouth Street, for Messrs. Vickers, Ltd.; also
Forty-eight houses, Liverpool Street; also
Power house, Bridge Road.
House, Dunoon Street, for the Cavendish Park Estates Company; also
Four houses, Farm Street.
Five houses, Newcastle Street, for Mr. P. H. Fisher.
Two houses, corner of Oxford Street and Clarence Road. Mr. J. Neal, builder, 170 Ainslie Street.
Burnley.—The "Angel" Inn, Accrington Road and Sandygate: rebuilding and enlargement, for Mr. J. Forrest.
Oldham.—Sanatorium, Strinesdale. Messrs. Taylor & Simister, architects, 29 Queen Street.
Wigan. — Infirmary: additions. Messrs. Ralph (F.R.I.B.A.) & Son, architects, Leader's Buildings, King Street.
Proposed Rose Bridge Council school, Peel Street, Ince (£12,500).

LEICESTERSHIRE.
Lutterworth.—Seven Council cottages, Leicester Road.
Market Harborough.—Five houses, Wartnaby Street, for Mr. Garlick.
Shepshed.—Working-class dwellings.

LINCOLNSHIRE.
Grantham.—Proposed R.C. school.
Lincoln.—The John Dawber Memorial Sanatorium (£11,000).
Spalding.—Children's homes, for B.G.

MIDDLESEX.
Ealing.—Workmen's dwellings (£5,300).
Friern Barnet.—The "Railway" Hotel: alterations.

MONMOUTHSHIRE.
Abertillery.—P.M. schools, Somerset Street (£2,000).
Pontypool.—County school, Tranch (£9,100).

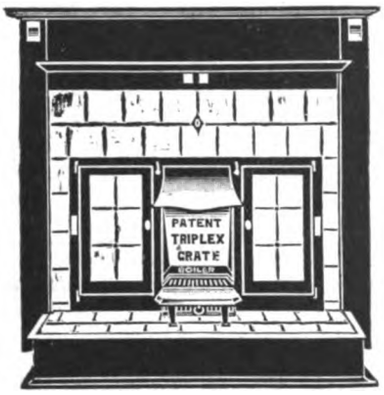
NORFOLK
Smallburgh.—Workhouse infirmary: alterations to females' section. Mr. Dale, architect.

NORTHAMPTONSHIRE.
Brackley.—County school. Messrs. Law & Harris, F.R.I.B.A., architects, 1 Sheep Street, Northampton.

NORTHUMBERLAND.
Alnwick.—Eighteen Council houses.

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ENGLAND—*continued.*

NOTTINGHAMSHIRE.

Nottingham.—Business premises, for the Co-operative Society, Ltd. Mr. W. V. Betts, architect; Bank Offices, Radford Road, Old Basford. Mr. F. Evans, contractor, Highbury Road, Bulwell (£13,436).

Council schools, Forest Fields (£6,800), and in Scotland Place, Old Basford.

SOMERSET.

Taunton.—Proposed public baths, St. James's Street (£3,000). Borough surveyor.

Weston-super-Mare.—Public slaughter-houses.

STAFFORDSHIRE.

Burton-on-Trent.—Business premises, Moseley Street: alterations, for the Hammond Manufacturing Co. (£750).

Lichfield.—Smallpox hospital additions. Borough surveyor.

Workhouse Infirmary: alterations. Mr. R. J. Barnes, architect, 39-41 Bore Street.

Tamworth.—Cemetery chapel (£1,150).

Wednesbury.—Five houses in Westbourne Road, and seven houses in Wolverhampton Street, Darlaston, for the Darlaston Housing Co., Ltd.

West Bromwich.—Council school, Greet's Green. Mr. A. Long, architect, 21 New Street.

Wolverhampton.—Working-class dwellings.

New Works, Park Lane, Heathtown, for the Guy Motor Company.

SUSSEX.

Bognor.—Workmen's cottages.

WARWICKSHIRE.

Astwood Bank.—Four houses. Mr. Dick, architect.

Birmingham.—Proposed police station, corner of Bristol and Great Colmore Streets.

WILTSHIRE.

Swindon.—Fourteen houses, Wroughton Road, for Mr. E. H. Bradley.

Fifty-six houses, Wroughton Road, for Mrs. N. E. Colbourne.

YORKSHIRE.

Aislaby.—Vicarage. Messrs. Lofthouse & Sons, R.I.B.A., architects, 129 Albert Road, Middlesbrough.

Barnoldswick.—Twenty-two houses, East Avenue, for Messrs. Proctor, Barrett & Son, Ltd.

Doncaster.—Police station, mortuary, &c., High and Low Roads, Balby.

Proposed public hall and Sunday schools, St. Jude's, Hexthorpe.

Huddersfield.—House, Butter Nab, South Crosland. Messrs. Lunn & Kaye, architects, 14 John William Street (also at Milnsbridge).

Maltby.—Police station (£2,350).

Sheffield.—Fire Station, Rockingham Street: proposed extension (£4,100).

Lodge Moor Fever Hospital: extensions (£63,500).

Spofforth.—Cottage houses, for Wetherby R.D.C.

WALES.

Criccieth.—Seventeen workmen's dwellings (£3,300).

Mountain Ash.—House, Cefn-pennar. Messrs. Morgan & Elford, architects, 1 Jeffrey Street. Mr. T. W. Davies, contractor, Prosser Street (£750).

SCOTLAND.

Cambuslang.—Post Office, Bridge Street.

Cupar.—Business premises, Steele's Close: partial rebuilding, &c., for Messrs. Westwood & Son.

Dunfermline.—Tuberculosis sanatorium.

Glenboig.—Board school for 350 places; also master's house, for Cadder and Monklands School Boards.

IRELAND.

Tipperary.—Working-class houses (£23,000).

THE term of the Slade Professorship of Fine Art at Cambridge expires on February 20. Professor E. S. Prior, M.A., A.R.A., who has so successfully organised the new school of architecture in the University, is offering himself for re-election, and, if re-elected, will hold the professorship for life, or until resignation.

MR. J. R. WIGFULL, hon. secretary of the Sheffield Society of Architects and Surveyors, informs us that thirty-seven members of that Society and clerks in their employ have joined His Majesty's forces since the war began.

PATENT SPECIFICATIONS PUBLISHED JANUARY 14, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 21,324. Sept. 22, 1913.—W. H. Caswell, 46 Fountain Road, Tooting, S.W. Scoop or appliance for cleansing gullies and the like.

21,627. Sept. 25, 1913.—W. R. Hume, Flinders Street, Adelaide, South Australia.—Reinforcements for concrete or similar pipes, conduits, and the like and machines for manufacturing the same.

26,925. Nov. 22, 1913.—Thos. Parker, 62 Guildford Street, London.—Method of and means for moulding and finishing bricks, building material, and the like.

29,283. Dec. 19, 1913.—A. M. Low, Pellen Lodge, Goldhawk Road, W.—Acetylene generating apparatus.

29,365. Dec. 20, 1913.—James Straiton, 230 Strand Road, Bootle, Lancs. Fastening for doors.

29,684. Dec. 24, 1913.—H. S. Dyke, 28 Doctor's Piece, Willenhall. Hinges.

30,038. Dec. 31, 1913.—John Shanks, Tubal Works, Barrhead, Renfrewshire. Ball or storm valve for water-closets.

1,108. Jan. 15, 1914.—John Shanks, Tubal Works, Barrhead, Renfrewshire. Combined valve and siphon device.

2,108. Jan. 27, 1914.—H. W. Chapman, 14 Gledhow Wood Avenue, Roundhay, Leeds. Apparatus for clearing the straining grids of sewers, watercourses, and the like of deposited matter.

2,633. Feb. 2, 1914.—T. E. Barralet, and the Parkinson Stove Co., Ltd., Stour Street, Spring Hill, Birmingham. Water heaters or geysers.

2,640. Feb. 2, 1914.—L. F. Tooth, of the Commercial Gas Co., Harford Street, Stepney, E. Gas burners.

4,708. Feb. 24, 1914.—T. R. McDowall, 14 Upstall Street, Myatt's Park, S.E., and S. G. Perkins, 27 Twilly Street, Wandsworth, S.W. Congrete glazing bars or the like.

5,793. Mar. 7, 1914.—Samuel Thompson & Co. (Millfields, Ltd.), of Millfield Works, near Wolverhampton, and William Harrison, 45 Darlington Street, Wolverhampton. Flushing cisterns.

7,967. Mar. 30, 1914.—J. M. Firth, The Mount, Todmorden. Domestic firegrates.

9,357. April 15, 1914.—John Gracie, Forth View, Inverkeithing, Fifeshire. Machines for dressing paving setts.

9,920. April 22, 1914. Dated under International Convention, June 13, 1913.—Chas. Butters, 221 59th Street, Oakland, Alameda, California. Filtering process and apparatus.

11,170. May 6, 1914.—J. C. Grant, Albert Lodge, Albert Place, Victoria Road, Kensington. Guard or baffle ring for gas stoves and other gas ring burners.

11,545. May 11, 1914.—W. A. Heywood, 18 Carlton House Terrace, London. New or improved adjustable set square.

13,100. May 28, 1914.—Capt. J. H. Hardcastle, 114 Adelaide Road, Hampstead, and A. H. Taylor, 13 Busby Place, Camden Road, London. Varnish.

15,438. June 27, 1914.—Leslie Webster, "Rockeries," Heath, Leighton Buzzard, Bedfordshire. Sifting device for grading gravel, sand, or other material.

17,320. July 21, 1914.—Martin Patent Davit Co., Ltd., and A. W. Wells, 9 Union Court, Liverpool. Hoisting and lowering apparatus.

17,407. July 22, 1914.—St. Louis Briquette Machine Co., Security Building, St. Louis, Missouri, U.S.A. Briquet machine.

18,085. July 31, 1914.—Henry Corcoran, 42 Main Street, Bray, Wicklow, Ireland. Locking device for gas meter connections.

13,012. May 27, 1914.—R. H. Paus, 7 Victoria Park, Shipley, York. Flushing cisterns.

16,301. July 8, 1914.—C. I. Deane, Walla Walla, Washington, U.S.A. Reinforced concrete piles.

18,532. Aug. 11, 1914.—John Barr, of Glenfield & Kennedy, Ltd., Kilmarnock, Ayr. Lift valves.

16,700. July 13, 1914.—E. F. Sutton, of The Ladies Empire Club, 69 Grosvenor Street, W. Fuel economising device for stoves and fireplaces.

20,926. Sept. 16, 1913. Dated under International Convention, October 18, 1912.—Alfredo Venturi, 131 Via Luigi Canonica, Milan. Manufacture of limestone.

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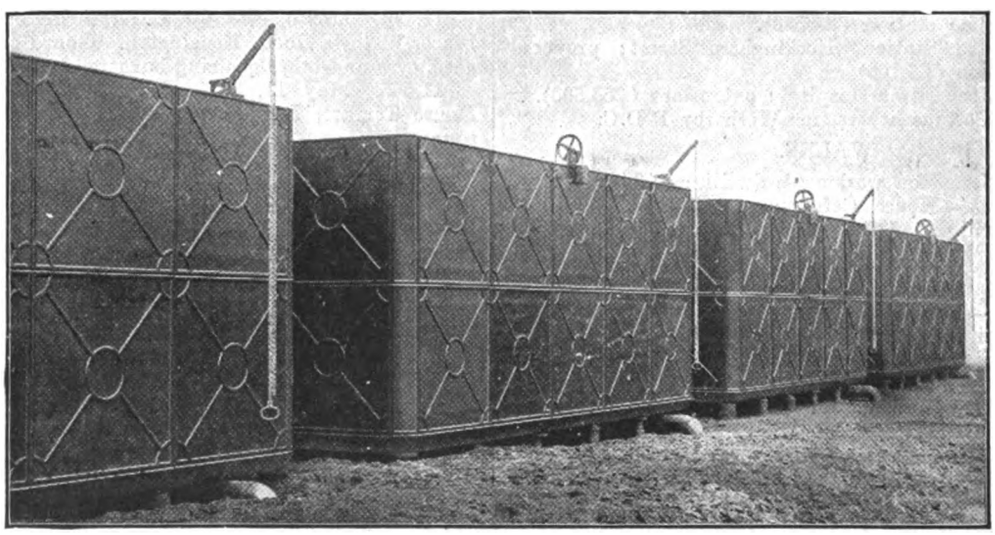
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18,109. July 31, 1914.—Robert Douglas, 2 Bridge Street, Treforest, Glam. Step ladders and appliances for adapting same for use on roofs and inclined surfaces.

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Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Lessons from the Enemy.

SIR,—I note that in the article of your last issue, headed "Lessons from the Enemy," you advocate the collaboration of English architects, builders, &c., in the re-edification of ruined Belgium. This, of course, may prove very desirable under proper conditions, but, as regards architects, do you not somewhat overlook the claim and capacity of the Belgian professional with his established methods and traditions and his superior local knowledge of every description? As regards one part of the problem, that of the reparative treatment of injured antiquity—including, it may be, whole quarters in different townships—that is obviously best left in the hands of those who have specialised (and they are not few) in their ancient national style, providing they will exercise, as far as the circumstances permit, a conservatism somewhat foreign to their past practice in "restoration." But even where an entirely new departure may be needed surely we should guard against imposing our own methods and ideals on our neighbour, for it would be an added misfortune—and savouring, indeed, too much of the enemy's principles—if the renovation following on destruction were to proceed on lines of a mechanical and ready-made uniformity, and that of an alien type. Sentiment as well as business must enter into the matter, and nationalism and localism must be allowed due scope, else "the restoration of Belgium" will be a misnomer. The problem is no doubt a difficult one, and perhaps the most practical solution would be a temporary and speedy reconstruction pending a permanent one thought out and carried out at leisure under the guidance of the men on the spot.

As to the influence of events on our organisation of things at home, I trust that one of the "Lessons" we shall learn will be that State omnipotence, however valuable as a war expedient, is an enemy characteristic to be strenuously rejected under the normal conditions of peace.—I am, yours obediently,

W. RANDOLPH.

January 20, 1915.

Architects and Contractors and Income Tax.

SIR,—As many architects and contractors have been adversely affected by the war, I should like to draw the attention of your readers to the concession which was granted by the Chancellor a short while ago.

Where the profits of the present year have fallen below the average of the previous three years, a taxpayer has the right to bring into the average the profit for this year in place of that for the first of the three years already taken into average.

An example will perhaps more clearly illustrate this.

Let us suppose a taxpayer's profits for the years 1911, 1912, and 1913 have been £1,500, £1,200, and £1,500 respectively, then the assessment levied upon him for 1914-15 would be upon the average of these three amounts—viz. £1,400. But if this taxpayer could prove that his profits had dropped to, say, £300 for 1914, then he would be entitled to take the average of the three years 1912, 1913, and 1914, and in this particular case this would be £1,000, so that a saving of tax would be effected upon £400, which at the high rate at present in force would mean a considerable amount.—I am, Sir, yours faithfully,

THE INCOME TAX RECLAMATION ASSOCIATION, LTD.,
WILFRED T. FRY, *Secretary.*

Architects' War Service Bureau.

SIR,—I should be glad if you would again grant me space in your Journal to discuss recruiting for the Army.

The Architects' War Service Bureau is in a position to advise professional and business men, and men of skilled trades, as to the branch of the Forces in which they can best serve the Government, and for which they are personally most suited.

More particularly we are recruiting for the Royal Engineers and Sanitary Companies. But we are also at present making a special effort to recruit a gun section for the R.F.A. Howitzer Reserve, to be composed of professional and business men, who will serve together.

Lastly, since the War Office has officially recognised the Volunteer Training Corps now existing in London, no man, whatever his age or circumstances, has any excuse for not being a member of a military organisation. Those who can join the Regular Forces should do so at once; those who cannot should join the Architects' Volunteer Training Corps, which is recognised by the Architects' War Committee, the Surveyors' Institution, the Auctioneers' and Estate Agents Institution, the Junior Art Workers' Guild, and the London Master Builders' Association.

By doing so they can materially help the recruiting authorities to distinguish between the "willing" and "unwilling" members of the community.

All recruits should apply direct to 18 Tufton Street, Westminster, S.W.—Yours faithfully,

ALAN POTTER,
Hon. Recruiter, A.V.T.C.
18 Tufton Street, Westminster, S.W.: Jan. 19, 1915.

ACCORDING to a report issued on Monday last by the Board of Trade concerning unemployment in the United Kingdom, architects and artists seem to be among the worst hit of the professional classes.

THE Department of Prints and Drawings of the British Museum is once more to be enriched by a handsome bequest of very fine water-colours. By his will the Rev. C. J. Sale, at one time Rector of Holt, near Worcester, left to the British Museum his choice collection of about one hundred water-colour drawings by David Cox, Turner, and Peter de Wint, his widow to retain possession of them during her lifetime. She died recently, and in due course the drawings will pass to the care of Mr. Campbell Dodgson. In all likelihood they will be publicly exhibited, but they will first have to be carefully remounted.

THE International Garden Cities and Town Planning Association have arranged a two days' conference at the Guildhall on February 15 and 16 to discuss the possibility of rebuilding Belgium on garden city lines. The Lord Mayor will welcome the guests, and an opening address will be given by Mr. Herbert Samuel, President of the Local Government Board. Belgium will be officially represented by M. Hellepute, Minister of Agriculture and Public Works, and others, and visits will be arranged to places of architectural and town planning interests in various parts of the country.

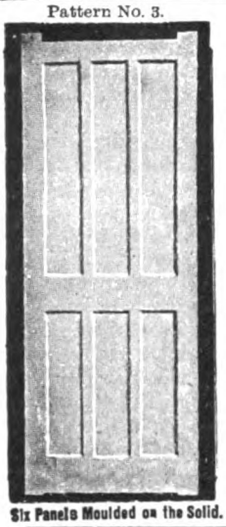
A FOURTH Memorandum on the operation of the Housing, Town Planning Act of 1909 states that the activity on the part of local authorities in regard to various phases of the housing question, as well as in regard to town planning, increased materially during the year 1914. At the cost of landlords or owners 64,332 houses were made fit for habitation in the past year, the total for the four years being 194,668. Loans to the amount of £1.074,521 were sanctioned for the purchase of land and erection of houses for the working classes, the number of houses to be erected being 4,223.

THE R.I.B.A. Board of Architectural Education inform us that in connection with the recent final and special examination the Ashpitel Prize for 1914 was awarded to Mr. George Eric Francis, of 115 Newlands Park, Sydenham, he being the candidate who has most highly distinguished himself in the examinations held during 1914. Also that Mr. Leslie Patrick Abercrombie, of the University, Liverpool, a candidate for the special examination, was awarded the Mark of Distinction for his Thesis on "The Development of the Plan and Architectural Character of three European Capitals—Paris, Vienna, and Brussels."

THE new Cambridge Street Council School, Newcastle-on-Tyne, one of the largest to be erected by the Education Committee of the City Council, was opened on Monday. The building is from the designs of Mr. J. H. Morton, F.R.I.B.A., which were placed first in competition. It is a three-storied building, accommodating 1,200 scholars, including infants, junior and senior mixed departments. In addition to these, a handicraft room for boys, and a domestic science room for girls, are enclosed in the main building. A novel feature is a roof playground, being the first to be erected in this city. The school has been designed so that practically every class-room has a sunny aspect and through ventilation. The contractors were Messrs. S. Sheriff & Sons, of South Shields.

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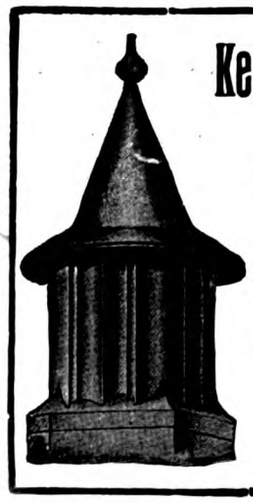
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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 22, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1s., which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

LIVERPOOL.—Feb. 8.—The Corporation invite designs for workmen's dwellings, to accommodate about 500 persons, and proposed to be erected on the site known as the Rathbone Street area. Premiums of £100, £50 and £25 respectively are offered for the first three selected designs, and the Council have appointed Mr. Henry Hartley, F.R.I.B.A., as assessor. The first premiated design will become the property of the Corporation. A plan of site, together with a copy of the printed conditions and instructions, will be forwarded to the applicant on payment of a deposit of £1 1s., which will be returned on the receipt of a bona-fide set of drawings. Mr. E. R. Pickmere, town clerk, Municipal Offices, Liverpool.

MACCLESFIELD.—Jan. 31.—The Lands and Town Development Committee invite competitive plans, &c., for a housing scheme from the local architects and builders. Plans, specification, and estimate must be deposited not later than January 31, 1915, marked on the outside cover, "Housing Scheme." Mr. S. C. Baggott, Borough Surveyor, Macclesfield.

CONTRACTS OPEN.

ASHCHURCH.—Feb. 10.—For the erection of six cottages at Aston Cross, Ashchurch, for the Tewkesbury Rural District Council. Deposit 10*s.* 6*d.* Messrs. Protheroe, Phillott & Barnard, architects, 31 Promenade, Cheltenham.

ASHTON-UNDER-LYNE.—Feb. 1.—For supply and delivery of about 21 tons of structural steelwork, comprising roof trusses, stanchions, joists, angle brackets, &c., for the Stalybridge and Dunkinfield Joint Sewerage Board. Deposit 10*s.* 6*d.* Mr. C. J. Lomax, A.M.I.C.E., engineer, 37 Cross Street, Manchester.

ASTON-BY-STONE.—Jan. 26.—For erection of a farm institute at Aston-by-Stone, comprising model farm, dairy, hostel, principal's house and cottages, for the Staffordshire Education Committee. Send applications and £2 2*s.* deposit by Jan. 26 to Mr. Graham Balfour, director of education, Stafford.

BALDOCK.—Feb. 15.—For erection of six cottages with outbuildings at Hinxworth Place, Farm, for the Hertfordshire County Council. Mr. W. H. Crozier, land agent, 60 Fore Street, Hertford.

BRISTOL.—For erection of a house in Leigh Woods. Messrs, La Trobe & Weston, F.R.I.B.A., architects, Unity Street, Bristol.

BURY.—Jan. 30.—For construction of an extension to reinforced concrete retaining wall at the electricity generating station, Chamber Hall, for the Corporation. Deposit £2. Mr. J. A. Settle, A.M.I.C.E., borough engineer, Bank Street, Bury, Lancs.

CAVERSHAM.—For alterations and additions to premises in Bridge Street and Church Street, for the Corporation. (Reading builders only.) Messrs. Millar & Son, architects, 1 Arcade Chambers, Reading.

DARLINGTON.—For erection of cottages in Melland Street. Mr. G. Haw, 10 Greenbank Road, North Darlington.

EDMONTON.—Jan. 26.—For supply and delivery at Silver Street of about 95 tons of British rolled-steel joists. for the Urban District Council. Mr. C. Brown, A.M.I.C.E., engineer, Town Hall, Edmonton.

EDMONTON.—Jan. 26.—For supply and delivery of about 900 feet run of York stone coping at Silver Street, for the Edmonton Urban District Council. Mr. C. Brown, A.M.I.C.E., engineer, Town Hall, Edmonton.

GREAT TORRINGTON.—Feb. 1.—For the removal of old cottage buildings known as 85 and 87 Well Street, Great Torrington, and the erection and completion of five dwelling-houses, with offices, &c., for the Town Council. Mr. W. C. Medland, borough surveyor, Castle Street, Great Torrington.

HARROW.—Jan. 30.—For erection of a small shelter and the provision and erection of swings and giant strides, for the Urban District Council. Mr. J. P. Bennetts, engineer and surveyor, Council Offices, Harrow.

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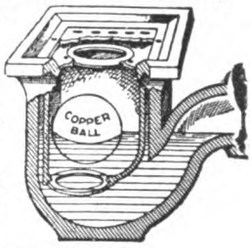
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HESWALL.—Jan. 25.—For a discharge block at the Pensby Convalescent Home, near Heswall, Cheshire, for the Wirral Joint Hospital Board. Messrs. J. H. Davies & Sons, architects, 14 Newgate Street, Chester.

HOLMES CHAPEL.—Feb. 4.—For erection of a proposed Council school at Holmes Chapel, Cheshire, for the Administrative Sub-Committee for Education for the Congleton Union area. Deposit £1 1s. Messrs. Alfred Price & Sons, architects, Sandbach.

IRELAND.—Jan. 26.—For erection of a tuberculosis dispensary in the grounds of the Louth County Infirmary, Dundalk, for the Tuberculosis Committee of Management of the Louth County Council. Mr. V. J. O'Connell, architect, Earl Street, Dundalk.

IRELAND.—Jan. 29.—For erecting a new school at Tierlahood. Rev. T. Clarke, P.P., V.F., Parochial House, Stradone.

IRELAND.—Jan. 30.—For building labourers' single and double cottages, and for fencing 70 plots, for the Gorey Rural District Council. Also to erect two concrete bridges as set out in the specification. Clerk of the Rural District Council, Gorey.

IRELAND.—Feb. 1.—For erection of thirty-six artisans' dwellings at Sallynoggin, Kingstown, for the Kingstown Urban District Council. Deposit £2 2s. (Messrs. Caldbeck & Dunlop, architects, 2 St. Andrew Street, Dublin.) Mr. J. S. Vaughan, town clerk, Town Hall, Kingstown.

IRELAND.—Feb. 1.—For erection of a central dispensary under the Tuberculosis Act (1908) on the grounds of the County Infirmary, Tullamore, for the King's County Hospital and Dispensaries Committee. The County Surveyor's Office, Court House, Tullamore.

LONDON.—Jan. 26.—For construction of an engine house, including the foundations for gas engines and pumps, the construction of culverts and connecting chambers, suction and delivery pipes, &c., and other works on the south side of the present engine house, at the Council's Isle of Dogs Pumping Station, situated on the east side of Stewart Street, in the borough of Poplar, for the London County Council. Deposit £5. The Council's Chief Engineer at the County Hall, Spring Gardens, S.W.

LONDON.—Jan. 28.—For alterations to the boiler house and builder's work in connection with a new heating installation at the Greenwich Infirmary, Vanbrugh Hill, East Greenwich, for the Guardians of Greenwich Union. Deposit £2. Mr. A. Roberts, F.R.I.B.A., 92 London Street, Greenwich.

LONDON.—Feb. 11.—For the repair and renewal of the iron and lead gutters, and also for the repair of the lanterns to the stable roof of the Council's depôt buildings, Stockwell Road and Combermere Road, Stockwell, for the Lambeth Borough Council. Mr. H. Edwards, C.E., borough engineer, Town Hall, Brixton Hill, S.W.

MANCHESTER.—Feb. 2.—For supply of an organ, seatings, pulpit, &c., for a new church at Styal, Handforth, near Manchester, for the South Manchester Board of Guardians. Deposit 10s. 6d. Mr. Fred. H. Overmann, F.M.S.A., 49 King Street, Manchester.

NUNEATON.—Jan. 27.—For erection of mortuary and public convenience in Queen's Road, for the Corporation. Deposit £1 1s. Mr. F. C. Cook, borough surveyor, Municipal Offices, Nuneaton.

PORTSMOUTH.—Feb. 4.—For carrying out of extensions to the infectious diseases hospital at Milton, comprising the addition of three new wings, a nurses' block, extension of laundry, mortuary, &c., for the Town Council. Deposit £3 3s. The Borough Engineer, Town Hall, Portsmouth.

RADCLIFFE.—Feb. 13.—For the construction and completion of sixteen dwelling-houses (in eight blocks of two each) on the Stand Lane site, for the Radcliffe Urban District Council. Deposit £2 2s. Mr. W. L. Rothwell, engineer and surveyor, Council Offices, Radcliffe.

ROCHDALE.—Jan. 27.—For erection and completion of repair shops in Mellor Street in the following trades, for the Tramways Committee: (*a*) reinforced concrete foundations and car platform; (*b*) steelwork (steel frame); (*c*) builders' work. Mr. P. W. Hathaway, A.R.I.B.A., Town Hall, Rochdale.

ST. HELENS.—Feb. 23.—For erection of a refuse destructor, together with all contingent works, at the Parr Depôt, within the borough. Deposit £2. Mr. A. W. Bradley, M.Inst.C.E., borough engineer, Town Hall, St. Helens.

SCOTLAND.—Jan. 26.—For mason, concrete, and brick work, carpenter and joiner work, plumber and slater work, steel and iron work, cement and rough casting, and painter work of buildings proposed to be erected at Greenhead Filters, for the Irvine and District Water Board. Deposit £1. Mr. H. Thomson, architect, Saltcoats.

SCOTLAND.—Jan. 27.—For the following work required in connection with the reconstruction and extension of Couper Institute, Cathcart, for the Glasgow Corporation—viz.: (1) Digger, mason, brick, and steel works; (2) carpenter, joiner, glazier, ironmonger, and iron-roofing works; (3) plumber work; (4) lath and plaster works; (5) slater work; and (6) tile work. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—Jan. 27.—For the mason, slater and joiner work of rebuilding the merchant's shop at Kirkton, Tonley, by Whitehouse. Messrs. Hunter & Gordon, advocates, 80 Union Street, Aberdeen.

SCOTLAND.—Jan. 28.—For the construction and erection at the new wharf, now under construction at the east side of Camperdown Dock, of two steel-framed sheds, covered with corrugated iron, one about 300 feet long by 180 feet wide, and the other about 240 feet long by 180 feet wide, for the Dundee Harbour Trustees. Mr. J. H. Thompson, M.Sc., M.I.C.E., general manager and engineer, Harbour Trust, Dundee.

SCOTLAND.—Jan. 30.—For executing the mason, carpenter, plumber, plasterer, asphalter, glazier, and slater works of alterations at Woodhead School, for the Fyvie School Board. Mr. W. Thomson, clerk to the Board, Fyvie, and Messrs. Kelly & Nicol, architects, 367 Union Street, Aberdeen.

SCOTLAND.—Feb. 2.—For extension of Coatbridge Post Office, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work, and not for separate trades. Deposit £1 1s. The Clerk of Works, H.M. Office of Works, Head Post Office, Glasgow, and H.M. Office of Works, 3 Parliament Square, Edinburgh.

SEATON DELAVAL.—Jan. 28.—For erection of a police station, for the Northumberland Standing Joint Committee. Deposit £2. Mr. J. A. Bean, county surveyor, Moothall, Newcastle-on-Tyne.

SHEFFIELD.—Feb. 2.—For the supply of materials and works required in connection with the erection of a transformer sub-station in Carr Road, Walkley, Sheffield, for the Electric Supply Committee. Deposit £1 1s. Mr. S. E. Fedden, general manager and engineer, Commercial Street, Sheffield.

SOWERBY BRIDGE.—Jan. 29.—For the taking up and relaying concrete floor at the Tuel Lane Council School, for the West Riding Education Committee. Mr. F. J. Macdonald, Education Offices, Sowerby Bridge.

STOKE-ON-TRENT.—Feb. 25.—For the reconstruction of a portion of the roofing at the Hanley Baths, for the Corporation. The Borough Surveyor, Town Hall, Stoke-on-Trent.

TOTTENHAM.—Jan. 30.—For erection of a deaf school for eighty children and a mentally deficient school for 100 children on the Philip Lane site, for the Tottenham Education Committee. Send applications and £2 2s. deposit by Jan. 30 to Mr. G. E. T. Laurence, A.R.I.B.A., 22 Buckingham Street, Adelphi, W.C.

TRURO.—Jan. 28.—For the work in connection with the construction and erection of a new roof over the Council Chamber and adjoining rooms at the Municipal Buildings. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

UPHOLLAND.—Jan. 30.—For erection of eight workmen's dwellings, for the Upholland Urban District Council. Deposit £1 1s. Mr. A. Hunt, surveyor, Council Offices, Upholland, Lancs.

WALES.—Jan. 23.—For erection and completion of a workmen's club and institute, Talbot Square, Aberavon. Send applications and £2 2s. deposit by January 23 to Mr. F. B. Smith, M.S.A., architect and surveyor, Port Talbot.

WALES.—Jan. 30.—For the conversion of Park House, The Quar, Merthyr Tydfil, into two cottages. Mr. T. E. Rees, M.S.A., architect, Bank Chambers, Merthyr Tydfil.

WALES.—Jan. 30.—For erection of boundary walls and fence walls at the Cemetery at Goitre, Port Talbot, for the Margam Urban District Council. Deposit £2 2s. Mr. J. Cox, surveyor, Port Talbot.

WALES.—Feb. 4.—For alterations to Cardiff Head Post Office, for the Commissioners of H. M. Works and Public Buildings. Deposit £1 1s. The Postmaster, Cardiff, and H.M. Office of Works, &c., Storey's Gate, S.W.

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WIGAN.—Jan. 25.—For erection of two padded rooms at Billinge Infirmary, for the Wigan Union. Messrs. Unwin & Holland, architects, 11 Library Street, Wigan.

WORLESTON.—Jan. 30.—For the carrying out of the works of erection of one single dwelling-house and two sets of farm buildings on the Worleston Estate, near Nantwich, for the Cheshire County Council. County Estate Office, 49 Northgate Street, Chester, and at the Estate Office, 10 Wellington Road, Nantwich.

TENDERS.

HINCKLEY.

For erection of new offices and additions to Sketchley Dye Works. Mr. W. T. GREWCOCK, A.R.I.B.A., architect, Leicester.

Herbert & Sons	£4,039	0	0
Jeffcote	4,028	0	0
Greaves	4,018	0	0
Chapman & Sons	4,005	0	0
Moss & Son	3,995	0	0
Hutchinson & Son	3,990	0	0
Bowles & Son	3,942	0	0
Sharpe & Son	3,940	0	0
Flavell	3,871	0	0
Clarke & Garret	3,840	0	0
J. BENTLEY & Co., Leicester (*accepted*)	3,789	0	0

LONDON.

For carrying out alterations to 12 and 13 Fulwood Place, Holborn, W.C. Mr. H. W. IDLE, architect, Cromwell House, Fulwood Place, Holborn, W.C.

Perry Bros.	£1,541	0	0
Hall	1,529	18	7
Seymour	1,475	0	0
Dilloway	1,350	7	3
Roads & Son	1,349	0	0

For the erection of a section house at Mare Street, Hackney, for the Receiver for the Metropolitan Police District. Mr. J. DIXON BUTLER, F.R.I.B.A., New Scotland Yard, S.W.

Wall Bros.	£12,700	0	0
McCormick & Son	12,392	0	0
Adamson & Sons	12,325	0	0
Shurmur & Sons	12,321	0	0
Roome & Co.	12,169	0	0
Perry & Co.	11,950	0	0
Jarvis & Sons	11,940	0	0
Sheffield Bros.	11,878	0	0
Dove Bros.	11,855	0	0
Sabey & Son	11,846	0	0
Higgs & Hill	11,798	0	0
Dickens	11,682	0	0
Patman & Fotheringham	11,671	0	0
Monk	11,620	0	0
Jerram	11,497	0	0
Ashby & Horner	11,411	0	0

For the erection of a chapel, lodge, &c., at their new cemetery, Lower Marsh Lane, Surbiton, for the Surbiton Urban District Council. Mr. H. W. BANNAN, architect, 8 Philpot Lane, London, E.C.

Annett	£2,793	6	2
Fletcher	2,628	14	5
Jarvis & Co.	2,508	10	0
Lenn, Thornton & Co.	2,544	0	0
Scofield & Sons	2,498	10	0
W. Akers & Co.	2,467	0	0
A. Roberts & Co.	2,462	0	0
Smith & Sons	2.310	0	0
Pollerton	2,271	5	0
MYALL BROS., Southend (*accepted*)	2,021	0	0

For the erection of a reinforced concrete enclosure, to form a coal bunker, at their Grove Wharf, Lombard Road, Battersea, S.W., for the Battersea Borough Council.

THE EMPIRE STONE CO., LTD., Thanet House, Strand	£545	0	0

The work of carrying out the necessary excavations and levelling which may be required ready to receive the reinforced concrete work is to be carried out by the Council.

Seventeen tenders were received varying in prices from £2,560 (highest) and £2,512 (lowest).

WALES.

For the erection of cottage homes for children at Llandudno Junction, for the Conway Board of Guardians. Mr. S. C. FOULKES, architect, Colwyn Bay.

A. THORP, Llandudno (*accepted*)	£6,177	0	0

WARGRAVE.

For rebuilding St. Mary's Church, Wargrave, Berks. Mr. GEORGE H. FELLOWES PRYNNE, F.R.I.B.A. 6 Queen Anne's Gate, S.W., architect. Quantities by Mr. R. HENRY HALE, F.S.I., 6 Queen Anne's Gate, Westminster, S.W.

Trollope & Sons	£10,829	0	0
Easterling	10,556	0	0
Cox & Sons	10,399	0	0
Benfield & Loxley	10,177	6	2
Webster & Cannon	10,049	0	0
Longley & Co.	9,887	0	0
Goddard & Sons	9,147	0	0
Franklin, Ltd.	9,043	0	0
White Bowman	9,043	0	0
Cooper & Co.	8,997	0	0
Miskin & Sons	8,316	0	0
WALDEN & COX, Henley-on-Thames (*accepted*)	8,177	8	4

WIGTON.

For extensions to the new jam factory, for Messrs. Carr, White & Co., Ltd. Mr. JOHN J. DAVISON, architect, Wigton.

Accepted tenders.

A. Blakeley, Carlisle, builder.
Joseph Hill & Sons, Wigton, joiners.
Greenwood & Sons, Halifax, concretors.
George Fell, Wigton, asbestos tiling.
Rowell & Co., Ltd., London, roof steelwork.

WETHERBY.

For the various works in connection with a new Council school, for the West Riding Education Committee. The Education Architect, Wakefield.

Accepted tenders.

T. Throup & Sons, Horsforth, building	£1.770	0	0
C. E. Crow, Wetherby, joinery	680	0	0
F. R. Pullan, Leeds, plumbing	333	0	0
G. H. Waddington, Selby, plastering	230	15	3
J. Gill, Keighley, ironwork	195	6	6
J. Brook, Armley, asphalting	181	16	0
J. Dodgson & Son, York, slating	125	0	0
J. Hanson, Allerton, Bradford, painting	56	15	6

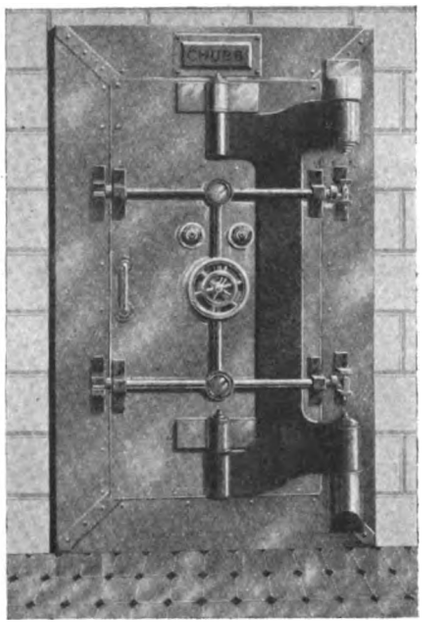
IRVINE and District Water Board have accepted the offer of Messrs. Wilson, Kinmond & Marr, Ltd., Glasgow, to lay a new main pipe from Munnoch reservoir to Greenhead filters at a cost of £3,539 14*s.* 6*d.* The Board recently decided to abandon the sandbed system of filtration, and it had been agreed to adopt the Paterson system of rapid filters. The Board accordingly accepted the quotation of the Paterson Engineering Co., Ltd., to provide the new installation at a cost of £13,175, together with an oil engine at £145.

THE annual meeting of the Midland Centre of the National Federation of Building Trades Employers was held at the Imperial Hotel, Birmingham, on the 14th inst. The President (Mr. George Gough, Wolverhampton) presided. According to the report, business had been satisfactory until the beginning of August; the war had had a prejudicial effect upon the industry, and contracts were suspended. The associations affiliated to the centre now numbered twenty-four, an increase of one, which was formed and federated at Stratford-on-Avon at the beginning of the year. The Birmingham figures showed a steady increase in the total membership—268 at the present time as compared with 205 at the close of 1911. Under normal conditions the annual conference of Midland Centre secretaries and a meeting of the Efficiency Committee would have been held early in the autumn with a view to inaugurating a "missionary" effort. In view of the conditions brought about by the war, however, the Executive Council had come to the conclusion that the present time was inopportune for attempting aggressive work. The report was approved, and the officers for 1915 were appointed as follows: Mr. Ralph Webb (Birmingham), President; Mr. Albert Brazier (Broomsgrove) and Mr. F. T. Doleman (Nottingham), Vice-Presidents; Mr. H. Willcock (Wolverhampton), Treasurer; and Mr. William Moffat (Birmingham) and Mr. Charles Garlick (Coventry), Auditors.

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CHUBB'S TREASURY DOOR.

IT is eminently fitting that such a concern as Chubb & Son's Lock and Safe Company, Ltd., should have a habitat in London's Lombard Street—"a certain street of the greatest credit in Europe," as Addison describes it. For, as all the world knows, Lombard Street has for centuries been the resort of bankers, deriving its very name from the race of Italian bankers and pawnbrokers who settled there long ago and flourished amazingly. The name of "Chubb" is, of course, everywhere associated with the last word in the safe-keeping of money. Quite recently passers-by in that historic thoroughfare have been able to get a gratuitous view in the window of No. 45 of a Chubb's latest Treasury Door. Thereby they probably gained a more vivid idea of the wealth hidden behind the modest fronts in the immediate vicinity than they have ever had before. A door which, with its frame, weighs 6½ tons cannot fail to be imposing or to suggest the guardianship of fabulous wealth. It may also further suggest the scientific skill of the modern burglar, which has rendered such titanic strength necessary. An attack may be made in many different ways. The perfect treasury has to be capable of resistance to all. Thus we find in section this 8-inch door is built up of layers of five-ply drill-resisting steel, some inches of reinforced concrete, Chubb's special alloy, an anti-concussion spring diaphragm plate, and tough Siemens steel. Not until all



these have been separately negotiated is the lock and bolt chamber reached. The bolts are controlled by two keyless combination locks capable of some million variations. If desired, these locks may, in addition, be checked by the time lock, made with four independent chronometer movements, which prevents the door being opened before a given moment by anyone knowing the combinations on which the locks are set. Structurally a special feature is the crane hinge, by means of which the first movement in closing is a direct drive inwards, and as all edges of the door and frame are square, an air- and water-tight fit is thus permanently obtained. The extremely heavy cast-steel frame is built in one solid piece. These doors can be adapted for use with any strong-room, although in most instances they have been fitted to a Chubb's "Triple Treasury"—*i.e.*, two steel strong-rooms placed one within the other, and reinforced concrete packed between. It would really seem as if bankers could defy safe-breakers even when equipped with nitro-glycerine, the oxy-acetylene blowpipe, or any other aid.

THE Newport (Mon.) Elementary Education Committee recommend the provision of a school for physically and mentally defective children, which it is estimated would cost £10,000.

THE Sunderland Town Council decided at their last meeting to proceed with the Barnes Estate Secondary School for Boys scheme. An amended estimate showed that owing to the increase in the price of materials the cost of the scheme would be £40,290, or £3,101 more than the original estimate.

VARIETIES.

THE Hove Town Council have decided to insure the Town Hall against war risks damage for the sum of £20,000.

MR. JOSEPH TILT, of Mount Pleasant, Bromsgrove, retired builder and contractor, has left estate valued at £35,618, of which net personalty is sworn at £6,121.

THE Thames Conservancy have provisionally agreed to plans of a new bridge of reinforced concrete to be constructed across the river between Goring and Steatley. They have also passed plans for two proposed new bridges between Reading and Caversham.

AT Coventry last week a Coventry labourer failed in an application for compensation against Kelly & Son, builders. While applicant was working at Stoke a sweep knocked a chimney-pot off an adjoining house, and the pot fell on Hall and injured him. Judge Cann held that the injury did not arise out of the man's employment.

THE Conway and Colwyn Bay Joint Water Supply Board have under consideration plans prepared by their engineer for a girder bridge which it is proposed to erect over the Conway river at Dolgarrog. At present the 15-in. main to Colwyn Bay is laid under the bed of the river, and it is found to be liable to burst, causing interruption of the supply and great expense in renewal. The bridge will have its piers laid on strong concrete foundations resting on piles, and will give sufficient head room for navigation of the river steamers.

WE have received from the Great Central Railway Company a copy of the Immingham Tide Table for 1915. This neat booklet, which has been produced in pocket size, gives the high-water and low-water tides at Immingham for each day of the year, in addition to useful facts and figures, charges, steamship services, &c., respecting the ports of Immingham and Grimsby. Copies of the Tide Table will be sent free on application to Great Central Railway Publicity Office, 216 Marylebone Road, London, N.W.

MR. WALTER BUSBRIDGE, of Plumstead, who died on the 7th inst. at the age of seventy-four, was widely known and respected among men engaged in the building industries of London. Mr. Busbridge was one of the pioneers of local technical education, and started classes at Woolwich and Deptford as far back as 1866. In conjunction with Mr. T. Jones, he established at Woolwich the first class for the study of building construction to be opened in the London district. He gradually organised the group of classes known as the Metropolitan Drawing Classes. Many of the students trained under his direction obtained distinguished positions in this and other countries. The prizes awarded to his students by the Science and Art Department could be numbered in thousands.

TRADE NOTES.

UNDER the direction of Messrs. Mence & Finn, architects, 11 St. Peter's Street, St. Albans, Herts, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "Air-pump" ventilator and air inlets, has been applied to the new Board-room, St. Albans Union Workhouse, Herts.

MESSRS. E. H. SHORLAND & BROTHER, LTD., of Failsworth, Manchester, have recently carried out the following contracts: The Infectious Diseases Hospital, Cambridge, is being supplied with their warm-air ventilating patent Manchester stoves with descending smoke flues; the Hambledon Instituton (children's quarters) and the Berriew Council Schools are being supplied with Shorland's patent Manchester grates; the Barrow-in-Furness Infectious Diseases Hospital and the hospital at Bridgwater are being supplied with warm-air ventilating Manchester stoves; the Runcorn New Town's Depôt is being supplied with Shorland's exhaust roof ventilators.

NOT only the roofs of most buildings in these isles have been tested as to water-tightness by the recent heavy rains, but also the walls and cellars. A wall or cellar that has failed to keep a structure dry during this period can, we are assured, be made bone dry by adding the powder "Pudlo" to the cement used for concreting and rendering. The makers claim to have cured many such cases, and will be pleased to advise if full particulars are sent. We understand that for the Bilton Schools the powder "Pudlo" has been specified for impregnating the cement. The architects for the Staff Institute, belonging to Messrs. Swann & Hunter, of Wallsend-on-Tyne, are having the artificial stone work treated with "Pudlo." Apart from the waterproofing properties of the powder, it is reported to give artificial stone a bright and clean appearance, with sharp, clear cut arrises.

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THE ARCHITECT

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FORTHCOMING EVENTS

Monday, February 1.

Royal Institute of British Architects: Business Meeting at 8 P.M.

Royal Academy: Lectures on Sculpture (1) "The Nature and Aims of the Art of Sculpture in Prehistoric and Historic Times," by Sir Charles Waldstein, Litt.D., Ph.D., at 4 P.M.

Society of Engineers: Presidental Address by Mr. Norman Scorgie, at 7.30 P.M.

Wednesday, February 3.

Royal Archæological Institute: Paper entitled "Rheims Cathedral," by Mr. Aymer Vallance, M.A., F.S.A., at 4.30 P.M.

Institute of Sanitary Engineers: Paper entitled "Problems in Modern Illumination," by Mr. Valentine H. Mackinney, at 8 P.M.

Carpenters' Hall: Paper entitled "Flemish Civic Buildings," by Mr. W. H. Ansell, A.R.I.B.A., A.R.E., at 7.45 P.M.

Royal Academy: Lectures on Sculpture (2), "Archaic Greek Sculpture," by Sir Charles Waldstein, Litt.D., Ph.D., at 4 P.M.

Thursday, February 4.

Concrete Institute: A Discussion on Report of the Science and Reinforced Concrete Practice Standing Committees, on "A Standard Specification for Reinforced Concrete," at 7.30 P.M.

THE TIMBER TRADE IN 1914.

To some extent the position of the timber trade is a criterion of the position of building, for if the consumption of timber is not wholly due to building, it is more intimately connected therewith than with any other industry, even than with mining or printing, which certainly come nearer than any others to building in their reliance on timber, and, with these, the importation of pit props and of wood pulp are so distinct that their participation in the timber trade does not vitiate any conclusions as to building that may be drawn.

The notable features most strongly affecting the timber trade during the past year, it is scarcely necessary to point out, have been the economic disputes in the building trade during the first part of the year and the influence of the war in the latter. At the beginning of the year the heavy stocks of soft wood in this country, the result of the largest import into the United Kingdom known for at least seven years, tended to reduce prices, and this tendency was accentuated by the building strike, so that imports and sales were below the average. From February onwards the building strike had a depressing effect on the markets, but buyers for consumption failed to get much benefit in reduced prices, owing to the continued firmness of shippers for the prices of the past year and the easier money rates, which enabled importers to hold their stock. The last four months of the year have been all in favour of importers, who, in consequence of the termination of the building strike and the resumption of work on contracts long held up, coupled with enormous Government orders, were able to unload large stocks at enhanced prices, uninfluenced by increased shipments, for shippers have had serious difficulties to contend with.

The import of soft woods during the past year has been 27 per cent. below that of the year before, an exceptionally heavy one in imports, and 18 per cent. of the preceding five years. Practically, say Messrs. Foy, Morgan and Co., in their annual wood report for 1914, the whole of the deficiency in comparison with the previous year is accounted for by the diminished shipments from Russia, the shortage amounting to about half-a-million standards, or 90 per cent. of the total decrease—a fact which will be readily understood when it is remembered that, since the outbreak of hostilities, no export has been possible from Petrograd, Riga, or the Gulf of Finland, whilst the shipments even from the Finnish ports in the Gulf of Bothnia have been greatly restricted. Scandinavia, on the whole, notwithstanding many difficulties and vexatious interruption of shipments, has maintained its position in regard to the volume of business done with this country.

The German proclamation in November making wood contraband caused a great deal of excitement in the timber market when its effect was realised, and led to an increase in prices which within a fortnight amounted to 30*s*. to 40*s*. a standard. It has been calculated that the shipments from Sweden on this account have been reduced by nearly 100,000 standards below the quantity which might otherwise have been expected. There can be no doubt, however, that stockholders in this country have been making unusually good profits, for during the last four months prices have risen even more rapidly than the cost of importing fresh goods, the increase on some sizes reaching £4 to £5 per standard. The increased cost of freight does not account for the whole of this, in spite of the scarcity of tonnage due to the commandeering of a large number of steamers by the Government and the total withdrawal of the German mercantile fleet. The increased cost of freight no doubt accounts for the failure of transatlantic shippers to take full advantage of the enhanced prices ruling in this country, with the result that shipments from transatlantic ports have during the year been 16 per cent. below the average of the five years 1906-1912.

Although high prices are likely to continue it does not appear that there will be anything approaching a famine in timber for the present, as a sufficiency of stock for winter requirements is assured, partly owing to the energetic action of the Russian Government in keeping the White Sea ports free of ice for some two months later than usual. The requirements of the Government for soft wood are not likely to be so considerable now that the accommodation for the new army has been practically all provided.

Turning now to hard woods, we find that the total quantity of mahogany imported into London during the last twelve months is about 5 per cent. less than the amount imported during 1913. The decrease is chiefly accounted for by the diminished quantities received from Africa and the absence of importations from Nicaragua. On the other hand, there have been increased supplies from Honduras and Mexico, while the figures relating to other sources of supply show no material change. Although imports have decreased, sales have been very much less, by over 2,000,000 cubic feet, and as a large stock was carried forward from 1913 the slackened demand has resulted in no public auction of mahogany being held since the outbreak of war in any part of the United Kingdom. The stagnation in the cabinet and

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furniture trades has been the chief factor in this lessened demand.

Oak from overseas has been largely affected in supply by the war, German and Russian Baltic ports, as well as those of Austria, being quite unable to export. Yet we are somewhat surprised to note that, in spite of an increase during the last few months, largely owing to war requirements, the demand for American oak has been below the supply and is now at a low standard. Japanese oak, however—which, for building purposes, has for some time, often *sub rosa*, been taking the place of so-called Austrian oak—is taking an important place in the market, and considerable business in both logs and lumber has been transacted. The demand for oak is, of course, affected by the lessened requirements of the cabinet and furniture trade.

Teak has shown a change in the source of supply. From Moulmein the export of logs has practically ceased, nothing having arrived during the whole year. From Rangoon there has been a remarkable diminution, less than 500 loads having been received, as compared with 2,600 loads during the previous year. On the other hand, there has been a very large increase from Bangkok, the total quantity being more than double that of the previous year. The greater quantity of planks, however, still come from Rangoon. There is not much prospect of increased supplies of teak causing any material fall in prices; on the contrary, there is likely to be a steady maintenance of present prices during the early part of the coming year, with the possibility of a rising market later on.

There has been a decrease in the importations of Jarrah, the demand for paving sizes having practically ceased; but there has nevertheless been a good business in scantlings and special sizes, as well as in sleepers, and prices have been maintained. Kauri pine has increased in price, and owing to the special demands since the outbreak of war stocks are now quite small, so that lower prices are not to be expected.

The general outlook for timber, from the architect's and builder's point of view, is that of maintained or enhanced prices, particularly on account of the world's shortage of tonnage, which weighs heaviest on those more distant sources of supply that might otherwise have been in a good position to make up the deficiency of export from European countries caused by the war.

NOTES AND COMMENTS.

THE eagerness with which British traders are waking up to the possibilities of copying the German institution of the Leipzig Fair promises a boom in fairs in this country. Olympia, we are told, is to be the scene of a general fair, the British pottery and glass manufacturers' fair is proposed to be held at Stoke next month, and no doubt many more sectional fairs will follow. But have not the various trade exhibitions at the Agricultural Hall, Islington, and at other places in the Provinces had the opportunity of being Leipzig Fairs in reality? If they have not really filled the bill, it can only have been because their promoters have tried to attract the shillings of the general public and admitted side-shows to amuse them. A trade fair must be for traders alone. If it is a fair for a particular trade, it must be such that only members of that trade, real buyers and sellers, will attend. That principle has been the secret of the success of our recent Building Trade Exhibitions, and, in spite of the war, we are sorry to know that the biennial show which is due this year will not materialise. Architects are lacking work, and many are with the Colours. Orders would probably be few for the exhibitors, but the opportunity for education, to bear fruit in the future, would be great.

The restoration to Westminster Abbey of the sixteenth-century grille around the tomb of Lady Margaret Beaufort, mother of Henry VII., in the east end of the south aisle of Henry VII.'s chapel, has already received notice very generally in the daily Press; but the occasion is one so unhappily unique that, though necessarily belated, we feel it must be recorded in our columns. The grille is, considering its adventures, in a remarkably good state of preservation. At each of its angles and in the centre of the long sides is a rectangular pillar, with applied Gothic moulding, the upper part being twisted and surrounded by a finial, on which revolves a flag, originally painted. The sides are composed of vertical bars of lozenge section, supporting a horizontal band, with edges of twisted cable moulding, formerly ornamented with small appliques. On the upper edge is a line of fleurs-de-lis, alternately with pikeheads. Some verses by John Skelton, written on parchment and framed, formerly hung on it. The grille was taken from its position by the iconoclast Wyatt, the favourite restorer of Regency times. It was sold for a small sum, and remained in the family of the purchaser until recently bought by a London dealer, from whom the National Art Collections Fund acquired it. The grille seems to have been erected at the cost of St. John's College, Cambridge, Lady Margaret foundation, for the records of the college contain the specification, dated 1512, whose details correspond exactly with the grille as it now is.

It is not altogether a matter of regret that the pillagers of Belgium should have carried off to Germany many of the art treasures of the Netherlands, for they may thus be preserved from accidents that might occur in the stress of conflict, and their restoration can hardly escape being made one of the conditions of peace, for not only are they art treasures, but they are part of the capital that assisted Belgium in carrying on business as a tourist centre. From *Le Matin* we learn that the tryptich of the brothers Hubert and Jan Van Eyck—"The Adoration of the Lamb," of which the larger part was in the Church of Saint-Bavon, at Ghent, while two volets were in the Brussels Museum, and two in the Museum at Berlin—is now reconstituted in its entirety in the capital of the German Empire.

The pictures and miniatures of Hans Memling, which were a fortune to Bruges, in bringing each year to this town all the international colony of the artistic world to see them, have taken the same route.

The treasures of the Louvain Library, were they pillaged or burnt? Everything goes to support the belief that the treasures were carried off before the building was set on fire, and that the illuminated missals and the manuscripts, which were of inestimable value, formed part of the loads of the long string of automobile vans which on the day following the entry of the Prussians took the way for Germany.

From the Museum of Louvain has equally disappeared the picture of the Martyrdom of Saint Erasmus, by Dirck Bouts. The Berlin Museum had already possessed "The Last Supper," by the same painter.

The treasures of the cathedral of Reims, which included a large number of antique sacred vases, and the sacred Ampoule, which contained the holy oil with which the Kings of France used to be anointed, were saved and put in a place of safety before the entry of the Germans. It is believed that the same precaution was taken with "The Nativity," by Tintoretto; "The Apparition of the Christ to Mary Magdalene," by Titien; "Christ and the Angels," by Zucchero; and the "Crucifixion," by Germain.

Paragraphs having appeared in various journals conveying an erroneous idea as to further falls of masonry at Whitby Abbey, resulting from the bombardment of December, Mr. John Bilson, F.S.A., explains that no further falls have occurred subsequent to his report to the Society of Antiquaries, and thus states the facts: "The immediate effect of the bombardment on the west end of the nave and north aisle—the parts of the church

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which have suffered most—was the destruction of the arch of the west doorway and the masonry above it, leaving a great gap in the west wall; a huge rent in the eastern side of the staircase behind the west respond pier; and some injury to the west window of the north aisle, and what remained of its tracery, and to the face of the buttress in line with this wall. These blows must have destroyed the slight cohesion of the disintegrated masonry, and serious falls occurred some ten days after the bombardment. The wall arcades on either side of the west doorway collapsed, the wrought masonry leaving the rubble core of the walls. The upper part of the newel staircase and its whole eastern half also collapsed, down to below the capitals of the respond pier, and brought down with it the north jamb of the great west window."

We are glad to know that the Royal Commission on Public Records is directing its attention to the security of certain public records under the present war conditions. We have not had to suffer losses from foreign invasion, and it is improbable that we shall do so, but we are now faced with the new perils of bombardment and aerial incendiarism, and it is to be hoped that the official custodians of public records in the threatened districts will make suitable provision for the preservation of national treasures which, unlike most other treasure, material or artistic, can never be replaced. There are many indications in the recent reports of the Royal Commission that the existing arrangements for the safety of outlying records are quite unsatisfactory, and when normal conditions once more prevail in the public departments the subject will invite their most careful attention. In the meantime there is a risk that in the stress of official activities during the war public records may be treated with scant respect, or may even be destroyed wholesale to make room for warlike stores. It is known that grievous losses have been sustained by the nation from such inconsiderate action during the Crimean War, and even as late as the South African War there was more than one holocaust of records which probably dated from the Restoration.

In an interesting lecture entitled "The History of the Building of a Great Mediæval Church," Mr. John Watson, F.R.I.B.A., took as his example the Church of Holyrood Abbey, which, though smaller in scale than many of its sister churches in England, was typical of a church of the first rank. The history of the building of the Abbey began in 1128, when a charter was granted by King David I. to Canons Regular of St. Augustine, established at St. Andrews. A second charter, confirming the grant and dated between the years 1143 and 1147, is preserved in the City Chambers. This charter described the church as being dedicated in the names of St. Mary, St. Andrew, and All Saints, and implied the existence on the site of a church older than that of the Abbey. In 1911 excavations carried out by H.M. Office of Works, under the supervision of Mr. Oldrieve, revealed the foundations of a Celtic church with a cemetery adjoining, showing the ground had already been consecrated to religious use ere the Canons took possession of the site—a common occurrence. The early church appeared to have been a single-chamber church, to which a square or semi-circular sanctuary was subsequently added. In building the Abbey, the conventual buildings were first erected, and the presbytery of the church apparently was proceeded with simultaneously. In Mr. Watson's opinion the foundations of the whole Norman church were laid contemporaneously, and later the walls of the nave were adjusted to these foundations. All that remained *in situ* of this church, which was not completed, is the east door from the nave to the cloister incorporated in the present building. In the first quarter of the thirteenth century a reconstruction, projected some years earlier by John, fifth Abbot, was proceeded with, and the ruins of this reconstruction and enlargement were the Abbey Church we know. On plan is comprised a nave of eight bays, north and south transepts, with eastern chapels in the aisles, a presbytery of four bays with lateral aisles, with a processional path between the high altar and the eastern termination of the building—the Lady Chapel; the aisles on the south side were double. This building took from the last quarter of the twelfth century until the late fourteenth or early fifteenth century to complete. Its internal length from east to west is 267 feet, length across transepts from north to south 134 feet, and width across presbytery and aisles 60 feet.

WAR ITEMS.

IN connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austrian-Hungarian firms, the Board continue to receive a very large number of enquiries for the names of sellers or buyers of articles of which the sources of supply or market have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these enquiries, and lists are prepared and circulated of articles which enquirers desire (*a*) to purchase and (*b*) to sell. The seventh list is now ready and may be obtained by United Kingdom manufacturers and traders, together with copies of the previous lists, on application to the Branch.

British firms interested in any of the goods mentioned, either as buyers or sellers, should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

Amongst the articles which enquirers in the United Kingdom desire to purchase are asbestos slates, brick-making machinery, machinery for working marble and stone.

R.I.B.A. RECEPTION OF BELGIAN ARCHITECTS.

THE Royal Institute of British Architects has from the first opened its doors to the numerous Belgian architects who have sought asylum in this country from the reign of terror in their own. Certain privileges of membership have been accorded them, such as the use of the Institute's fine library and the right of attendance at its general meetings, and courtesies have been extended to them by individual members anxious to lessen the rigours of their exile. On Monday, January 25, a number of these gentlemen and their ladies were the guests of the Institute at a reception given in their honour at the R.I.B.A. in Conduit Street, Regent Street. The President, Mr. Ernest Newton, A.R.A., accompanied by Mrs. Newton, received the guests and warmly welcomed them on behalf of the Institute. The architects present included men eminent in their profession, some holding high official positions in Brussels, Antwerp, Liége, and other of the chief Belgian centres. The opportunity of meeting their colleagues under the hospitable roof of their British professional brethren was evidently much enjoyed and appreciated. On the walls of the reception rooms were displayed some of the treasures of the Institute collection, consisting of original drawings of the seventeenth-century Italian, French, and English masters, and the original water-colour drawings by James Stuart depicting views in Greece, afterwards reproduced in Stuart & Revett's famous work, "The Antiquities of Athens."

Among the Belgian guests present were: M. Adrian Blomme, M. et Mme. R. Vanverborght, M. et Mme. Alfred Portielje, M. Henri Carbon, M. Henri Blomme, M. et Mme. Brenta, M. et Mme. Geefs, M. et Mme. de Doncquers, Brussels; M. Georges Vellut, M. et Mme. J. Caluwaers, M. G. Van Oenen, M. F. Matthysseus, M. et Mme. Dhaeyer, M. et Mme. J. R. Vanhoenacker, M. et Mme. Auguste Verraert, M. Paul Lambotte (Director of the Fine Arts of Belgium) and Mme. Lambotte, M. L. Delbove, M. A.

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Defever, M. J. Bytebier, M. et Mme. Louis Hendrikx, of Antwerp and Brussels; M. A. Dujardin, M. Georges Dieltiens, and M. F. Hemelsoet.

R.I.B.A. PROBLEMS IN DESIGN.

THE designs submitted under Subject XVIII. will be on view in the gallery of the R.I.B.A. next Monday, Tuesday, and Wednesday, February 1, 2, and 3 inclusive, between the hours of 10 A.M. and 8 P.M.

COMPETITION NEWS.

CONNAH'S QUAY.—The Urban District Council invite competitive designs for laying out about three acres of ground within their district and the erection thereon of working-class houses.

DUNDEE.—The School Board have agreed to the extension of the Harris Academy on the present site in preference to the more costly erection of a new Academy. The scheme, which is expected to cost about £26,500, will be the subject of an open competition.

ILLUSTRATIONS.

HOUSE AND STUDIO, KENSINGTON.

THE drawing of the house and studio erected at St. Mary Abbott's Place, Kensington, for W. Llewellyn, Esq., A.R.A., from the designs of Mr. Arthur G. Leighton, F.R.I.B.A., was exhibited at the Royal Academy last year.

S. BARTHOLOMEW'S, SMITHFIELD.

THE illustrations from St. Bartholomew's are reproduced from water-colour drawings by Mr. Chas. S. Carter, the holder in 1914 of "The Architect" Travelling Studentship.

BILLINGSGATE STREET SCHOOL, GREENWICH.

WE here illustrate a competitive design submitted by Mr. Philip A. Robson, A.R.I.B.A., for the elementary school which the London County Council propose to erect in Greenwich. Mr. Robson also sent in an unsuccessful design for the Battersea school competition. In his notes Mr. Robson says: The Greenwich school for 700 children (for senior mixed and combined junior mixed and infants) was an infinitely more difficult problem owing to a very awkward site, and, apparently, most architects gave it up, as only thirteen sets were received. The winning design was not unlike the one here illustrated, except that there is no direct through ventilation—a point made much of in the first premiated plans for the Battersea school and apparently ignored in the case of the Greenwich school. On these plans direct through ventilation is obtained on both floors—below by means of covered playgrounds and above by the usual arrangement of low corridors and windows over the corridor roofs direct into the classrooms. As the playground space is deficient (owing to the cramped site) roof playgrounds are arranged for both boys and girls, leaving the infants plenty of room on the ground. The cost was estimated at £14 6*s.* 8*d.* per head.

A COURSE of ten University Extension Lectures on "Cathedral Cities of Belgium and Northern France," to be delivered by Mr. Allen Walker on Mondays at 2.45, began on January 25, at the Central Y.M.C.A., Tottenham Court Road. The fee for the course is 10*s.*

MR. CHARLES CHEVERTON, architect, Devonport, has been instructed by the local Education Committee to prepare sketch plans of the new King Street schools, and also the arrangements for accommodating the children in Sunday schools.

THE Committee of the Georgian Society of Dublin having completed their notable record of famous Dublin houses in five volumes, and having discharged all their obligations in connection with the work, have found themselves in possession of a surplus sum of £41 15*s.* This sum has been sent as a contribution in aid of the Dublin Castle Red Cross Hospital.

ON February 12 two Royal Academicians will be elected in place of the late Mr. W. H. B. Davis and of Mr. Lionel P. Smythe, who has retired. Mr. Smythe was born in 1840, elected an Associate in 1898, and made a full member as recently as 1911.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Architectural Association was held on Monday, the 25th inst., at Tufton Street, S.W. Mr. H. Austen Hall, F.R.I.B.A., Acting President, occupied the chair.

Two ordinary members and one country member were elected. Mr. Philip E. Webb, A.R.I.B.A., who was nominated at the last ordinary general meeting, was elected to fill the vacancy on the present Council. The Council's nominations for the House List for the ensuing session were announced, beginning with the name of Mr. H. Austen Hall as President. These nominations will be formally made at the next general meeting, when it will be competent for any two members of the Association to make additional nominations for the House List.

Professor W. R. Lethaby, F.R.I.B.A., then read the following paper entitled

"MODERN GERMAN ARCHITECTURE AND WHAT WE MAY LEARN FROM IT."

I accepted the invitation of your committee to lecture on this subject too readily, although, as a matter of fact, I did so with great hesitation. The times are too tremendous for talk, and in serious times the expression of any views which are narrowly personal is a mere impertinence. In some, in many respects, we must be the most capable and gifted nation on the earth, and there is a form of patriotism which would rest content in pride of these things. There is, however, also an intenser patriotic pride which hates to fall short in any worthy power or skill, and which would add to what we certainly have all of value in which we fail. There is a patriotism which would have London even as Athens and Florence, and cannot rest until we "have built Jerusalem in England's green and pleasant land." There might be a patriotism so proud that it would disdain to assert its virtues and be content with the acclamations and reverence of other peoples.

My right to speak of German architecture and arts and crafts comes from my having visited the country about half a dozen times, and having seen many of the most important cities, including Berlin. It was many years ago that I came to the personal conclusion that Germany was racing; that she had consciously divided up human activities and knowledge into departments, and had definitely set herself to outrun all other competitors in all of them. The guardians and directors of the State had, it seemed to me, substituted for the old customary methods and detached competitions in arts and sciences a clear and definite purpose of beating down all rivals and surpassing all emulation. This is not far-fetched; it has simply been the result of bringing in the Prussian war spirit into every phase of life. German science, of which I can only speak concerning archæology, German industry, German architecture, have all been re-cast under the dominating desire to attack and to conquer. Think what this means if it is true—and something like it must be true—that at some time, forty or fifty years ago, the real leaders of the Prussian Power should have gathered together in some room and have decided to enter on such a definite campaign. German museums, German books, German machine industry and factories, the German theatre, and all the rest were to outclass the spontaneous productions of neighbour States. This being the end in view, all the necessary means were easy to see and to apply. The efforts of other peoples were studied, reported on, absorbed, and their mistakes in many cases rectified. For it has been an essential part of the position that Germany, coming into the field as an attacking party, was able to select and experiment in a way that was impossible for those who, in many cases, had been the pioneers. This conquering spirit certainly carries far; we do not know how far, but it must have its limitations—it will, I think, dry up the sources of originality. It seems to me, although there is a certain absurdity in uttering individual opinions on the psychology of a colossal Empire, that the Prussian spirit runs to extremes; even organisation may perhaps be over-organised, specialisation too specialised, and thoroughness be too thorough. Germany seems to tend to the unmeasured. Domesticity and feeding seem to an outsider to be done without measure—education and erudition are perhaps carried beyond due measure, and violence is certainly made violent beyond measure. They seem to have amended the Greek doctrine of the mean into "everything beyond measure." There is in them—and perhaps they cannot help it—a radical outrageousness.

In casting about for reasons for this I have sometimes

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thought that one might be found in the fact that Northern Germany was never brought within the circle of ancient civilisation.

The most striking general characteristics of Germany to my mind are those of great size, of the number of cities which are obviously architectural and centres of learning, and of the dignity of the public services like the railways and trams. The size we cannot, of course, emulate, and we hardly perhaps realise the immensity of what by recent developments has practically become one Germany from the North Sea to the Adriatic, with a population nearly three times as large as ours. But the dignity of the cities and of the services must be acknowledged and praised.

I began by making notes of many points to speak on, but I shall limit myself to two.

The first thing in the arts which we should learn from Germany is how to appreciate English originality. Up to about twenty years ago there had been a very remarkable development of English art in all kinds. For five or six years, round about the year 1900, the German Government had attached to its Embassy in London an expert architect, Herr Muthesius, who became the historian (in German) of the English free architecture. All the architects who at that time did any building were investigated, sorted, tabulated, and, I must say, understood. Then, just as English free building had arrived, came a drear reaction and the re-emergence of the catalogued styles. It is equally true or far more true that the German advances in industrial design have been founded on the English arts and crafts. They saw the essence of our best essays in furniture, glass, textiles, printing, and all the rest, and, laying hold on them, coined them into money, while our Press, caught up into an eddy of devilish bright writing, set about to kill the whole thing. Just as we gave Germany many of the industrial ideas which she has so thoroughly exploited—the extracting of aniline dyes, for example. Just as she took up the arts and crafts experiments, which we employed critics to destroy at home. So we first seem to have arrived at the thought of an architecture which should develop in its own sphere, and not be for ever casting back to disguise itself in the skins which it had long ago sloughed off—or, like the dog of Scripture, eat its dinner twice over. (Even this image, however, is inadequate; the ideal seems to be that the architectural dog should for ever and ever re-swallow the same meal.) German architects have seized on this theory of a real architecture—or they have reached it for themselves. Meanwhile we have been caught up in one of our recurring reactions. Architecture is not seen as one of the forms in which the national energy, intellect, and spirit shall expand, but it is diverted and maimed and caged into formulas which are not only dead, but never had life.

The second thing which I wish we would earnestly compete in is PUBLIC WORKS. There are great things in a nation's life which cannot be estimated, and it is quite possible that for a dozen or fifteen years we have been living in the shadow of this terrible war and could do no other than we have done. But in our thought and in our effort as soon as may be we must set about public works everywhere and of every kind.

I take two instances from the newspapers of this month. We have had our recurring Thames Valley flood, which we get with surprise every eight or ten years. One morning my paper said that the fourteenth-century embankment of Chertsey was being watched with anxiety, and it was likely it would give way. Only a few years ago I went to Eton to see the discomfort of the school in another such flood. To anyone who travels it is a marvel how streams are guided and controlled and bridged—and we only need the "Happy Thought" that this may be, and shall be, the last Thames flood.

Now I give you a cutting from a recent paper: "Describing a visit paid by him five years ago to the Berlin Military Technical Academy, Sir George Greenhill said it was a magnificent institution, such as our rulers assured us we could not afford. The whole place, with its laboratories and other opportunities for the pursuit of peaceful science, was kept as smart and noble as one of our old colleges. There were plenty of outdoor artillery ranges close at hand for instructive work. Sixty officers were under instruction there for a course of three years, and their zeal was admirable. It was considered bad form not to give the best in return for the honour and glory of the Fatherland. It was a mournful contrast to revert to Woolwich, shabby and undisciplined, with the choice of a cellar under some stables or a kitchen and scullery and bare walls in a deserted hospital—there to organise victory at no expense. . . . We must put our trust in the junior ranks to push old Apathy from his stool and carry us through this war. . . . Our military science was under the rule of Thumb—the official genius whose fumbling method was considered a match for Disciplined Theory. 'Thumb' was hostile to 'Theory.' He scented a dangerous rival."

We must have magnificent institutions. There is not the least reason why we should not. They are paid for by taking money out of one pocket and putting it into the other, and the buildings then add to capital and plant. Expenditure of this sort is the only reasonable economy.

One thing the Germans have done is to organise a branch of orthodox and scientific political economy to deal with art and industries and the Arts and Crafts movement. I was visited last year by a man who had taken a doctor's degree with a thesis on this subject, who told me it was possible for him to obtain a university professorship as an expert in this branch. We must press the London School of Economics to consider this question and all the questions which have to do with quality in production. I have often asked, and am never answered, what are the conditions of public expenditure on fine streets and noble buildings in a city? How far is it desirable to have clean and organised cities, how far shabby and miserable ones?

I would here like to appeal to our architectural papers to consider for a time public works—not merely to chronicle them, but to ask for them, preach for them, and get them. The academic improvement of London is too apt to want to begin improving by pulling down some of the finest things we have, like the terrace in front of the National Gallery or the Nelson Column. On the other hand, it does splendid work in idealistic schemes of out-Haussmannising Haussmann. Still, we have no steady stream of opinion turned on everyday minor improvements, like the necessary putting in order of the underground stations which I travel by. And it would be such a welcome change to pictures of "Mr. A.'s" Billiard-room or "Mr. X.'s" Golf-cottage. Our great and noble architecture must be saved from being an adjunct of new-richness and week-ending.

A tremendous work has to be accomplished in England in improving all our villages and towns and the public services. Get into the habit of seeings things as they are, with the dirt, strewn paper, and orange peel thrown in; don't acquiesce, don't be content. It is our business to improve the organisation of public life as it is the doctor's to see to the public health. Go about saying Charing Cross Station must be put out of the way, and all the other stations improved; that advertisements must be kept in order, and the streets made clean. In your own work I would urge you to confidence and to go ahead. Throw away the hesitating carping spirit, venture on liking things; reserve criticism in the main for critics, and back up all active efforts. As much as lieth in you work with other men and other groups. Such association is an enormous gain of power. I see in our isolation the root of much of our artistic trouble. We are too apt to feel of another chap, "Oh, he's the fool that thinks I am a fool."

Now at the end I must try to make a confusing distinction. I have found that when modern German effort in city-building is praised, people ask me, "But do you like it?" It is a difficult question. Remember how little we really like before asking me if I like the hardness, glare, and brutality of modern Hanover, Strassburg, Magdeburg, or Cologne. They were not built for me to like, they were built for themselves. Besides, do I like modern Paris or London? Well, I don't. I do, however, greatly admire the wonderful efficiency and ambition of the Germans in city organisation.

[The lecture concluded with a series of examples of modern German work, such as bridges, shops, stores, offices, stations, and monuments.]

DISCUSSION.

Sir T. G. Jackson, Bart., R.A., in proposing a vote of thanks, said that when he first heard that the title of the paper was to be "What Architects may learn from the Enemy" he wondered whether this country was at the present moment far enough removed from the Germans to learn anything from them. Undoubtedly many things Germany does better than we do, such as her attack on Scarborough or her method of conducting warfare. But he did not know that we had much to learn in the way of patriotism. We are patriotic in a very different way to Germany; our patriotism consists in doing the best we can for our country; we do not vaunt it as being better than that of any other

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country. German patriotism was different. They love their country and admire it so well that they wish to include in it every other country, whether willing or unwilling. German culture was to be impressed on the whole of Europe: even our language and our arts were to become German. That principle was not true patriotism. For patriotism was love of your own country. The character of German art in the past had been, in the speaker's opinion, overrated by the Germans themselves. In the distant past their art has been borrowed from other people, though they have shown aptitude to learn. Their Romanesque was taken from Lombardy and their Gothic from France. They have never been distinguished for originality. Their pretension to superiority in scientific achievements has been disputed. Their inventions have been rather behindhand. Their great *forte* has been to exploit the inventions of other people. Aniline dyes were the discovery of an Englishman; wireless telegraphy was probably invented by an Englishman and carried to perfection by an Italian. The Germans possess an extraordinary faculty for diligently working up and adding to whatever they take up. They were distinguished in the past more as archæologists than as architects, though the German architecture of to-day is not altogether to be neglected. They have an extraordinary aptitude for order which is carried into every department of life. For example, if on a railway journey a dispute arises as to whether the carriage window should be open or shut, the matter is put to the vote, and should the votes be equal the guard is called in to decide. Such a thing is foreign to our English character. We have always been a people of individual tendencies, with an inborn distrust for everything the Government does. All our great movements in the past have risen from private enterprise. Our great public works have never come about till forced upon the authorities; they have always originated in private effort. Our public schools and universities are independent bodies instead of being run by the Government. Whether it would be a good thing for England to copy Germany he did not pretend to say, though, speaking for himself, he was an individualist. He must say that he had been agreeably surprised by the appearance of the works thrown upon the screen. All that was just shown was, of course, in its main motives engineer's work. This latter fact emphasised the truth that at the bottom of all good design lies good construction, and that no definite lines can be drawn between architecture and construction.

Mr. Martin Shaw Briggs, in seconding the vote of thanks, said Professor Lethaby had been brave enough to give the devil his due—a remarkable thing to do. One could not imagine any German professor giving a lecture at the present time in Germany on anything which could be learnt from England. Just before the war he had been in Germany studying their continuation school buildings, such as Lord Haldane would like to establish over here, and this involved a type of design which had been left alone by us. As a result of that study he would like to add his testimony to what Professor Lethaby had said as to two or three of the most valuable aspects of German architecture. There were various types of building from which he honestly believed we in this country could learn. Their railway stations had struck him tremendously, most of all that at Carlsruhe. Then came the commercial buildings and stores. Mr. March Phillips would probably see in these the realisation of all he had been preaching—*i.e.*, the beginning of a modern architecture. The German bridges alone are very wonderful. In one town the authorities preserve models of every public building of importance. In his study of the schools he was struck by two points where we could learn. First was the wonderful facility with which the Germans use modern materials, including plaster, concrete, and steel. Then there was the wonderful vigour displayed. Their use of plaster alone offers a wide field for study. The Germans understand colour and use it to perfection in their municipal buildings. As to other phases of German character, he might say there was hardly a backwater of knowledge where, if there is no other book on the subject, there is not a German work which proves to be thorough and containing just what one wants to know. He hoped the world was now seeing the unreal aspect of Germany and that that country would come back and apply their wonderful efficiency to other directions.

Mr. C. C. Brewer remarked it must have been a real struggle for anyone, and especially anyone of Professor Lethaby's temperament, to stand up and say what he had said about our enemy. Towards the end of his lecture Professor Lethaby had said that for the future one of the lessons we in this country had got to learn was to work together. That was the secret of their success. It did not mean abusing the other side. Sir T. G. Jackson a short time ago wrote a letter to the *Times* on German architecture. Much of what he had there told them they would agree with. But when he turned to modern work he gave the impression that the best that modern German work was capable of was seen in "the monstrous spires of Cologne Cathedral and the national memorial which disfigures Coblentz." But, judged by such standards, we of this country stand no less condemned. Witness the north transept of Westminster Abbey as to the first kind of work. Then, after all, the Coblentz memorial was saying something; but, he would ask, have our memorials said anything? Do the memorials in front of the Albert Hall and Buckingham Palace say anything that is national? Germany was doing the right thing. Even though the national spirit of Germany was bad, Germany was right in putting it into her monuments. In our own memorials there is nothing but the lesson of the antique shop, the lesson of Wardour Street. Professor Lethaby's paper was full of fine things. Personally he (Mr. Brewer) hated everything German and hated German architecture. Shortly before the war broke out he had been in North Germany, and there he had felt that, though there was stuff one might not like, at least it showed character, and national character. If it seems horrible and you dislike it, then you will dislike the German character.

Sir T. G. Jackson said that in his letter just referred to by Mr. Brewer he had gone so far as to call the memorial at Coblentz hideous; it did seem to him a brutal piece of architecture. If that work represented German character, then the Germans were right in putting it up. Nor could he consider the two monstrous spires added to Cologne Cathedral as beautiful. They seem to crush the cathedral, while the natives tell with pride how the spires are as high as the cathedral is long and how each finial is 15 feet across—that is, 15 feet too broad, for they have a spoiling effect by their very size. In fact, the whole cathedral is spoilt by this national megalomania. The same tendency is seen in their mediæval Gothic work. They continued the double aisles which the French gave up, and in at least one church the east end is so smothered in unnecessary flying buttresses that the apse is hardly visible. Nor could they make their long windows long enough. As one goes south the standard of architecture improves.

Mr. H. H. Statham did not think that modern German architecture had been quite done justice to by the photographs just shown to them. His own opinion was, nevertheless, that the Germans were essentially an inartistic people. But he was interested by their street architecture, some of which was more pleasing than any they had seen that night. He did, however, admire the bridges shown upon the screen, for they were such excellent engineering. He could not quite agree with Professor Lethaby's praise of their ironwork. Indeed, he thought the whole supremacy of Germany was very much overrated. It was a remarkable fact that of the only two great German poets, Goethe was one of the most unGerman men who ever lived and Heine hated the Germans. We of this country need not fear very much that they were our superiors in the arts. He was not quite sure that he had the same horror of intellectual architecture as Professor Lethaby had. To throw away tradition would in his opinion be a great loss.

Mr. W. Curtis Green contributed the following written communication: It is surely one of the ironies of fate that a nation that has at will produced the most universal chaos in the history of the world should be the people who have apparently made the greatest advance in transforming the chaos of the arts and industries into something approaching order. It is remarkable that a nation who in all its history has, so far as I know, never produced any first-class work or art, who has never shown much appreciation of the refinements of beauty or of nature, who has no originality, who as I understand it are without faith—having only one of the attributes of faith, that is courage—should yet have so many lessons to teach us. Here it is necessary to consider to whom those lessons are addressed. Are they to us as architects or as citizens? Are we to go to them as the fount of inspiration for the arts? Or for a model in co-operation and organised building? I think for the last. The appeal of their work is to order and discipline; these are qualities to inspire respect, but they are not the stuff out of which beauty is made; beauty is of the spirit. It is remarkable that Mr. Lethaby, with his wide outlook, his appreciation

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of the elements of essential beauty, should look to the reconstruction of the art in the study of the commonplace, and, if I understand him aright, to the sacrifice of individual search for perfection to the plane of a common and even vulgar lust of disciplined effort. In the attitude of commerce towards art and science there is much to be learned from the enemy. As architects we have nothing to learn from them that we cannot learn better from some of our fellow-architects, from Mr. Lethaby himself, here at home. New work of theirs that I have seen has that pleasing and deceitful touch of strangeness, that slightly foreign air, that is apt to confuse the student, because every great work of art has a touch of strangeness, but it is a strangeness foreign to the German atmosphere. The truth is that we are beginning to study architecture in the right way, that is to say, we are learning not only from the past but from each other; the Germans, who have always shown an adaptability to the ideas of other nations, a talent possessed also by ourselves, are copying us. For every pleasing illustration of their work we can show a better. What our work lacks is the cohesion given to it by the combination of the building arts with commerce and municipal enterprise. The future may hold a wider and better co-operation between industry and art and nation and nation. That is surely the tendency of modern movement.

Mr. H. Austen Hall, in closing the discussion, said while in Germany a few years ago he went to see the exhibition of competitive designs for a Bismarck memorial. The drawings were simply marvellous. Nearly every design showed a colossal figure. Yet the selected design was entirely different from all those, for it showed a symbolic figure of Siegfrid, while scenes from Bismarck's life were portrayed in panels. It struck him at the time that the bulk of the designs represented the bulk of the national feeling. But the fact of the selected design lacking all the brutality and horror of the others suggested that the Germans might really be getting tired of those characteristics. Perhaps in this war the German people are trying their last fling, their hitherto untried new engine of war has been thrown in. But after the war he believed that the German mind which selected that symbolical design—which imagination alone could give a meaning to—would become supreme; that they would in the future give up the Juggernaut business.

A vote of thanks was then carried by acclamation.

THE DIVISION OF THE AMBONE IN ROME.

By J. TAVENOR PERRY.

THE raid of Robert Guiscard on Rome in May 1084 synchronised with, if, indeed, it was not the initiating cause of, an alteration in the arrangements of the ambone and the ritual in connection with it. When he burst in at the Flaminian Gate, and had rescued the Pope from St. Angelo, he marched across the Campus Martius, through the Via Lata, and passing by the Imperial Fora, went as directly to the Lateran as the circumstances would permit, doing comparatively little damage to the city. The citizens, however, three days later attacked him, and he in retaliation laid waste the district round the Lateran, destroying the churches on the Caelian, and among them San Clemente and SS. Quattro Coronati; and it was in the subsequent rebuilding of the former of these churches that the first departure from the older ritual arrangement of the ambone was made.

We know that the injury inflicted on San Clemente on this occasion fell short of entire destruction, since much of the screenwork and wall decoration of the old and now subterranean church has survived. It had a presbytery and choir arranged much as at present, but without the ambones, and was similar in this respect to the ancient basilica of S. Petronella on the Via Ardeatea, excavated in 1873. The ancient screens enclosing the choir may have belonged to the time of Pope John VIII. (872-882), as his monogram appears on some of the slabs reused in the upper church; but parts may have been much older, as there is a portion of an altar among the reused fragments bearing the name of Pope Hormisdas, who reigned from 514 to 523. It is very clear, however, that there was no ambone connected with this screenwork in the original church, but that this must, as in the case of S. Petronella, have stood out in the nave before the doorway to the choir in the ancient manner. The screenwork was brought up from the lower church by Cardinal Anastasius in 1108 and arranged as we now see it, the old material being pieced out with new, and this date is fixed by the inscription on the episcopal chair which runs thus: "Anastasius Presbyter Cardinalis hujus tituli hoc opus cepit et perfecit." Whether the ambones were added at the same time or at some slightly subsequent period cannot now be determined, but that they were insertions is evident on the most cursory examination, as the panels of the screens have had to be cut and altered to make room for them, and they themselves are partly constructed of old screenwork or of an earlier ambone which has otherwise disappeared. We give a plan of the Schola Cantorum of San Clemente in its present state (Fig. 1), together with a sketch of the ambones (Fig. 2).

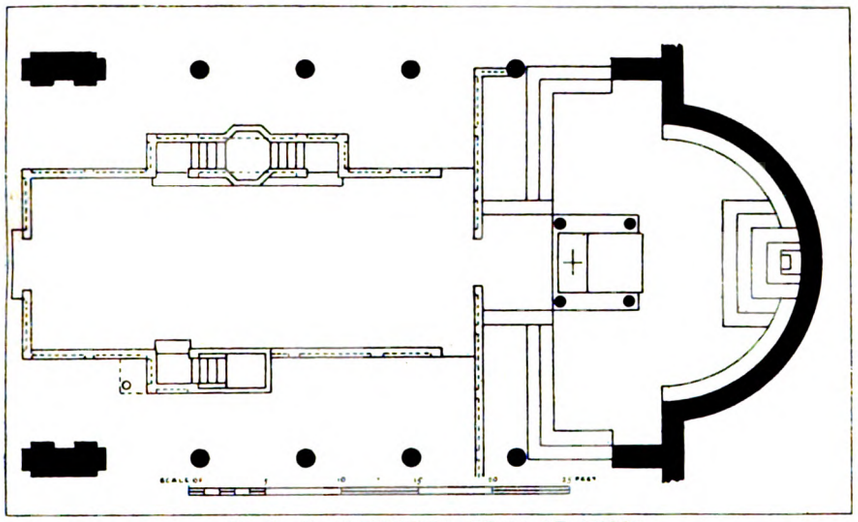


FIG. 1.—S. CLEMENTE.—PLAN OF CHOIR.

The erection of these double ambones in San Clemente not only marked an important change in church arrangement, and a modification of the ritual in regard to the Gospel reading, but it synchronised with another addition to the architectural appearance of this feature in the Paschal candlestick, which in future became associated in Rome and Southern Italy with the ambone devoted mainly to the Gospel reading and always now known as the Gospel ambone. From this time onward, where the size of the church allowed and other circumstances permitted, two ambones were erected as a rule; and if only one was set up, as frequently occurs in North Italy, it was no longer a central feature in the nave, but was relegated to one side or the other according to the position in which local custom required the Gospel to be read. But this alteration seems at the same time to have inaugurated an era of great activity in ambone building throughout Italy, and some of the most beautiful examples, rich in sculpture and mosaic, were erected during the following two centuries; at the same time in the rest of Europe and in the East, except in the Coptic churches, none appear to have been set up after the middle of the thirteenth century.

The change in the position of the ambone from the centre to the side of the nave necessitated some corresponding

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alteration in the details of the ceremonial which took place at the reading of the Gospel. When occupying a central position it is evident that the reader must have faced towards the west and the congregation, the book of the Gospels being held by the sub-deacon standing at the head of the descending steps; but when the ambone was shifted to the side the reader would naturally turn towards that side of the church on which the congregation was placed and rest the book on a desk or on the parapet. It is to be remembered that in early times the men were entirely separated from the women in church, and that the words of the Gospel were mainly addressed to them as the chief object of the Church's teaching, so that from them, as St. Paul requires, the women were to learn at home. It is necessary to quote the exact words of the Ordo Romanus on the subject since, for in spite of the very definite instructions it gives as to the position of the Gospel reader, a large proportion of Gospel ambones were so placed as to render these instructions impossible of fulfilment; and amongst these must be included many of the most important in North Italy; while of the three Gospel ambones still remaining in their original positions in Rome, San Clemente, S. Lorenzo, and Sta. Maria in Cosmedin, in only the last two can these instructions be complied with, and it is impossible to imagine a difference in local usage in placing the men of the congregation in three neighbouring churches in one city. The direction runs: "Evangelium lecturus stabat versus meridiem ad quam partem solent viri confluere. Cum enim antiquitus in Ecclesia pro viris et mulieribus essent loca distincta, Diaconus faciem vertebat ad partem virorum, qui in aliquibus Ecclesiis in meridionali, in aliis vero septentrionali parte stabant, et eum melius audire, tuasque domi uxores et liberos de Christi dictis et factis, prout Apostolus monet, instruere possent."

While central and single ambones only were in use no fixed desks for holding a book were provided, or, indeed, were practicable, since the reader, whether he turned to the altar on the one side or towards the congregation on the other, faced down or over an open flight of stairs, so that he must either have held the book himself or it must have been held for him by a sub-deacon standing at a lower level. When, however, the readings which had been confined to one ambone were divided between two, different arrangements had to be made and desks were immediately introduced, and the earliest we can give is that of San Clemente. In Rome no difference was made in the plan of the Gospel ambones, but only in their position, from what was already in vogue, and as no desk was added to the parapet on the side on which the deacon might have been expected to stand whilst reading, it is quite possible that the ancient practice of standing at the top of the steps and facing westwards while reading was continued for a little time after the introduction of the double ambones. A slight addition was made, however, in the case of S. Lorenzo, where a sculptured eagle was placed below the position occupied by the desk later on. But the smaller ambone from which the Epistle was read seems from the first to have been provided with a desk; indeed, in San Clemente there are two, the larger one towards the east to hold the book of the Epistles, and the smaller one towards the west, at the foot of the stairs, to hold the Psalter from which was chanted the Gradual.

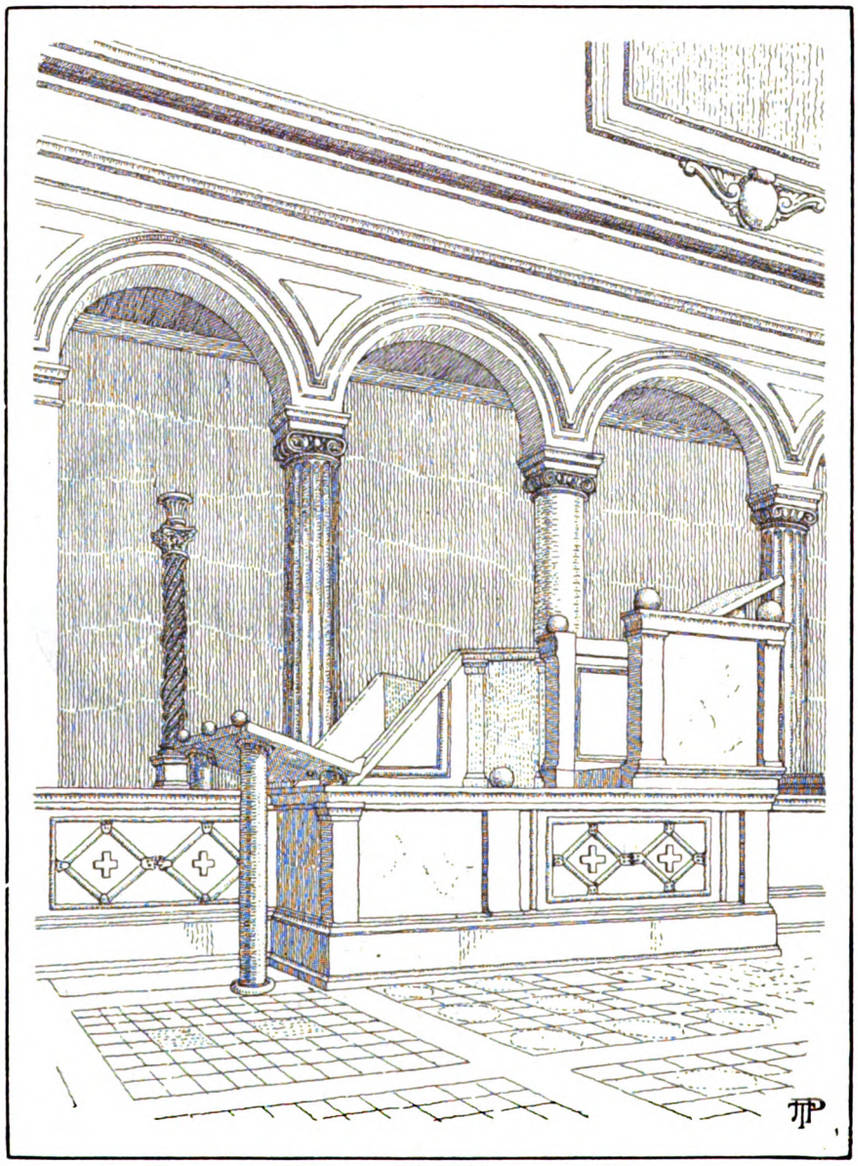


FIG. 2.—S. CLEMENTE.—EPISTLE AMBONE.

These desks developed by degrees into ornamental accessories, and in all Gospel ambones, or where one ambone served for all purposes, the Gospel desk was almost invariably supported on an eagle symbolic of St. John the Evangelist, and sometimes the other Evangelistic symbols were associated with it, the whole forming an important

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group of sculpture. And it must be noted that where a single side ambone served for all purposes a subsidiary desk was provided, sometimes on another face, and sometimes at an angle, for the book of the Epistles, so as to keep the Gospel desk solely for its more sacred purpose.

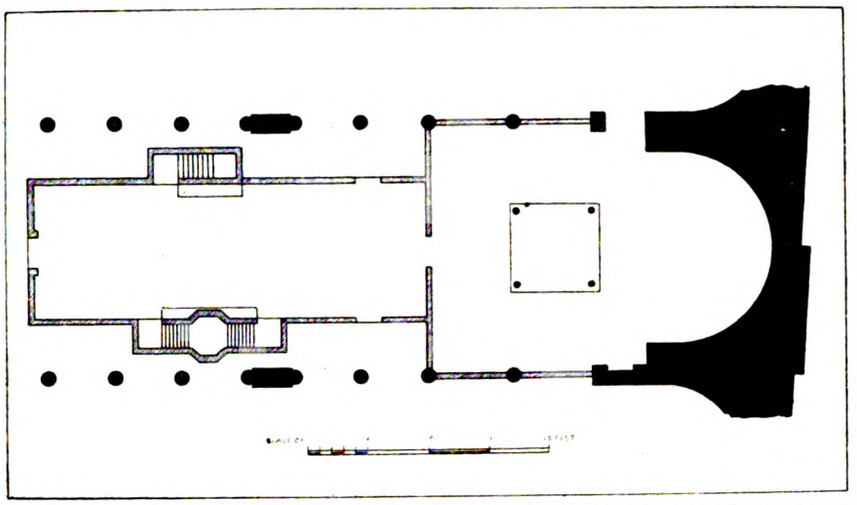


FIG. 3.—STA. MARIA IN COSMEDIN.—PLAN OF THE CANCELLI BEFORE DESTRUCTION.

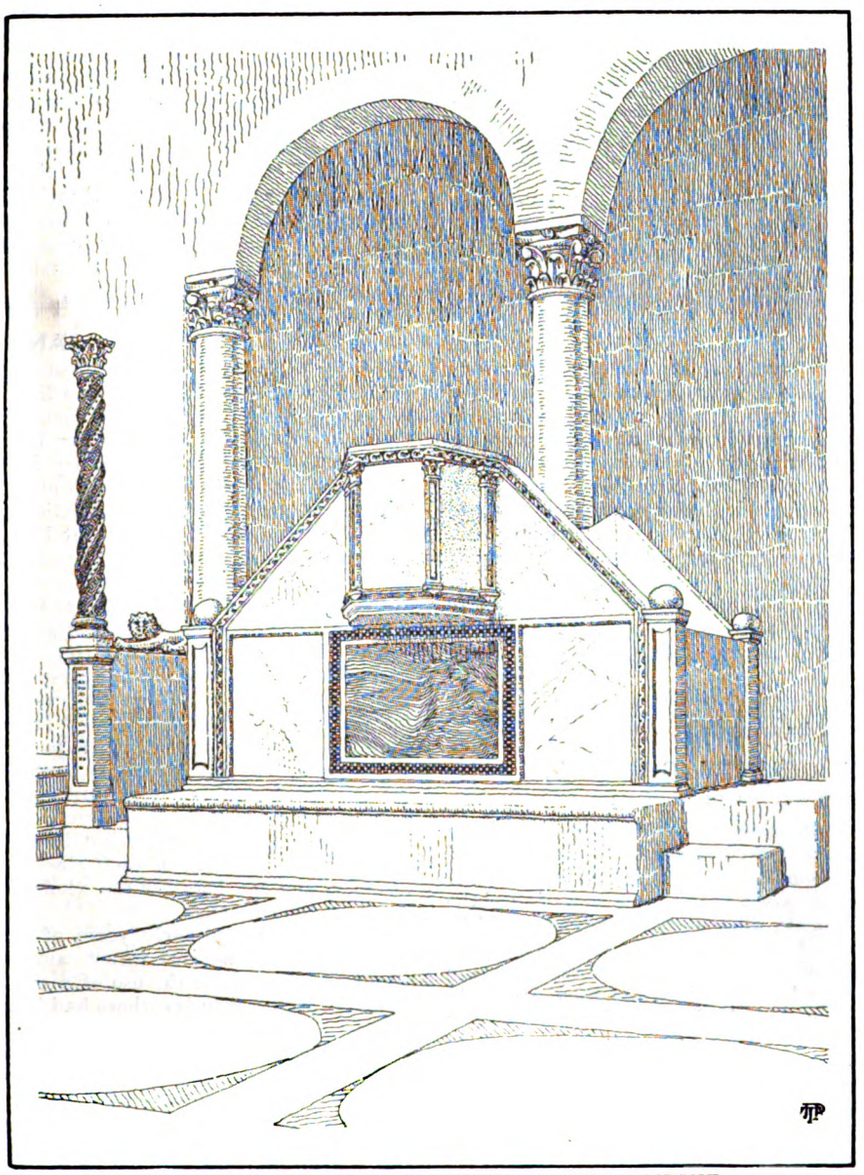


FIG. 4.—STA. MARIA IN COSMEDIN.—GOSPEL AMBONE.

Another important function fulfilled by the Gospel ambone, to which we have already referred, was the ceremony of the consecration of the Paschal candle on Easter Eve, which led to the association of a permanent marble candlestick with the ambone in Rome and many parts of Italy; but it must be remembered that this association was purely local, and that the Paschal candlesticks elsewhere were made of metal and so far movable that, as they were only required to be in use for six weeks, they could be taken down and put away when not wanted. As the candles were of very great size, such as the one made for Canterbury in 1457, which weighed 300 lb., the candlesticks had to be proportionately large; and the great bronze Paschal candlestick of Durham, which was put up and taken down each year, rose so high that the candle had to be lighted from a hole in the vaulting, and its branches spread out to nearly the width of the choir. The Italian examples, being

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of marble, sculptured or inlaid with mosaic, were of more modest dimensions, and were frequently subsidiary to the ambone itself, although at times they stood independently in front of it; and in several cases where the ambone has been destroyed the candlestick has been fortunately preserved, as in St. Paul-beyond-the-Walls, Rome, and the Duomo, Gaeta.

The ceremonies attendant on the consecration of the candle must be described. The fire for lighting it was obtained on Maundy Thursday from a flint struck outside the church door, from which a lamp was kindled and kept burning until Easter Eve, when the Paschal candle, which was blessed that day, was lighted from it. On Holy Saturday a hymn in praise of the candle, named the Præconium in the Missal, but more generally called the "Exultet," was sung in the ambone by a deacon vested in a white dalmatic, with other clergy in purple. The hymn and its music were written on long strips of parchment, known as "Exultet rolls," which were frequently very richly illuminated, and often contained contemporary portraits of emperors, Popes, and benefactors to the Church, making those which have been preserved of the greatest value. The whole ceremonial was beautiful in the extreme, for the lighting of the candle was followed by the lighting of all the lamps and candles in the church, which had been extinguished since Matins.

We have already described what happened on the reconstruction of the choir of San Clemente early in the twelfth century, and we must repeat that the positions then given to the Gospel and Epistle ambones were not adopted as a precedent, as contrary to the instructions of the "Ordo," but that, as far as we know, in all subsequent erections in Rome the Gospel ambone was placed to the right-hand side of the nave—that is to say, on the ritual south side—and the Epistle ambone to the left-hand side, looking towards the altar.

Perhaps the first pair of ambones to be erected in Rome subsequent to those of San Clemente were in Sta. Maria in Cosmedin, and although they still stand in the position in which they were first placed, the screens surrounding the Schola Cantorum, to which they were attached, have been removed, leaving as the only indication of its extent the raised platform which formed its floor (Fig. 3). These ambones are constructed entirely of Pavonezza marble, that for the Gospel being relieved by a fine slab of porphyry let into the front and surrounded by a band of mosaic (Fig. 4). The pulpit, which projects on both sides, as in the old central ambones, is without any desk. The Paschal candlestick standing on the parapet at the foot of the eastern staircase has a spiral shaft decorated with mosaics of the type which became common in Rome under the Cosimati, and has its base grasped between the paws of a couchant lion. In a panel of its supporting pier is an inscription which shows that its maker bore the appropriate name of Paschal. Supplying the elisions it runs: "Vir probus et doctus Paschalis rite vocatus summo cum studio condidit hunc cereum."

(To be concluded.)

LONDON COUNTY COUNCIL.

CRANE DERRICKS IN LONDON.

ARISING out of the recent crane accident on the site of the new London County Hall, which resulted in the death of one of the contractor's employees and serious injury to another, the question was raised at this week's meeting of the London County Council as to whether or not powers could be obtained for the control of crane derricks in the Metropolis.

Mr. J. D. Gilbert asked the Chairman of the Building Acts Committee whether his attention had been drawn to the comment of the Coroner at the inquest that "there was no control of these cranes in London, while in Scotland there was control." If the statement were correct, and considering the great increase in the number of such cranes on London building jobs, would the Committee consider the advisability of recommending the Council to apply for powers to regulate the erection of cranes in London in the interests of public safety?

Mr. Kingsley Wood (Chairman of the Committee) admitted cognisance of the Coroner's remarks and the jury's rider to their verdict, that all such structures should be erected and maintained under Government supervision, with frequent inspection. The Council, however, had no power beyond that contained in Part 9 of the London Building Act, 1894, which only enabled the Council to take action if such structures were known to be in a dangerous state. The Council in 1905 framed a Bill endeavouring to obtain power of control, but had to abandon the proposal owing to opposition. Bills dealing with the subject were introduced by the Government in 1908 and 1909, but those Bills were also opposed and withdrawn. The Committee was again considering the question of seeking power.

In consequence of the Coroner's observations, inquiries had been made by the Council's superintending architect from the Master of Works in Glasgow, and the statement that in Scotland there existed an official known as the Dean of Guild, who was appointed to supervise the erection of these cranes, was not corroborated.

WORKING-CLASS DWELLINGS.

An interesting sidelight was thrown on the contention, which has frequently been urged in all manner of deliberative and professional assemblies of the building world, that under existing conditions it is impossible for builders, speculative or otherwise, to erect workmen's dwellings at a profit. Speaking on a proposal presented by the Housing of the Working Classes Committee to proceed with the erection of working-class dwellings on the cleared Tabard Street site, Mr. Bernard Holland (Chairman of the Committee) said that, owing to increasing expenses and the fact that wages showed an upward tendency, it seemed very difficult indeed for the Council to build anything which would pay its way. In the case of voluntary work, they could avoid the difficulty by buying no new estates, but in cases of statutory obligation to build it became more and more difficult to meet the position on the basis of the principle laid down by the Progressive Party years ago, when labour was not so dear, and other conditions were not so irksome.

Mr. Bernard Holland's remarks constitute, in effect, official confirmation of the evidence given recently before the Scottish Housing Commission, that the erection of workmen's dwellings by private enterprise had virtually ceased, and that even local authorities were experiencing the greatest difficulty in initiating housing schemes on lines which would prove financially successful.

CONCRETE IN SANITATION.*

CONCRETE has played its part in sanitation for many years, with more or less success, according to the skill of the designer and the quality of the materials and workmanship. The tendency in recent years has been to employ concrete more and more, and this tendency in the future is sure to extend its use in directions where now it is scarcely applied. Sanitation works have been particularly affected by the attitude of the Local Government Board towards reinforced concrete, as such works are generally undertaken by local authorities, who have to obtain the sanction of the Board to the raising of a loan for the amount of capital expenditure, or else to obtain Parliamentary powers by means of a private Act. The great majority of authorities, however, adopt the first of these two courses of procedure, and the practice of the Board is, in the case of reinforced concrete for works in contact with water or sewage, to require the capital sum to be paid off in a period of ten years, while in the case of ordinary concrete, under the same conditions, the period of repayment is thirty years. In cases where, in addition to reinforced concrete in contact with water, there is reinforced concrete not in contact with water, the periods for the loans on each class are sometimes equated together, and the loan for the whole granted for the period given by the equation.

Doubtless in the early years of reinforced concrete the Board were well advised to act cautiously in the matter of sanctioning loans for the use of a combination of materials of which, in this country, there had been scarcely any experience, either as to its suitability or as to its life in sanitation works. The effect of this differentiation on the part of the Board in the treatment of concrete, and of reinforced concrete, has been to curtail the employment of the latter in public works of sanitation. It is clear that under the present conditions, where the loan is obtained for reinforced concrete, the burden thrown on the ratepayers annually to repay the principal and interest in equal annual instalments spread over ten years would be more than twice as great as for a loan of equal amount and ratio of interest obtained for ordinary concrete, to be repaid in equal annual

* **Abstract of Paper entitled "The Application of Concrete in Modern Sanitation" by Mr. Henry J. Tingle, M.Inst.C.E., read at a meeting of the Concrete Institute.**

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instalments in thirty years. The following example will illustrate the matter. If £1,000 be borrowed at 3¾ per cent. interest, to be repaid in equal half-yearly instalments of principal and interest for a term of ten years, the amount to be paid each half-year would be £60 8*s.* 6*d.*; for thirty years, £27 18*s.* 1*d.*

The difference between these two amounts is approximately £32 10*s.*, which is 116 per cent. of £28.

Under these circumstances it is only natural that most authorities elect to use ordinary concrete in order to ease the burden on the present ratepayers and throw part of it upon the ratepayers of the future.

The effect of the differentiation amounts to this—that unless the cost of the works can be considerably reduced by the employment of reinforced concrete as compared to ordinary concrete, there is but little probability of local authorities deciding in favour of the former. The requisite saving may be effected in some instances, but so far as the experience of the author goes this is not generally the case.

With the experience that has now been obtained relating to the behaviour of reinforced concrete that is constantly in contact either with water or with sewage, it is permissible to hope that the time is not far distant when the Local Government Board will reconsider its attitude towards this material, and in cases where it is proposed to make use of it will sanction loans on more favourable terms as to the period of repayment than those now in force.

Concrete has been, and is now, extensively used in the construction of reservoirs, sewage tanks, filters, aqueducts, and water towers. Full descriptions of these works are to be found in technical journals and volumes of proceedings of the various engineering societies. The same holds good for similar structures in reinforced concrete, though to a more limited extent, but numerous examples are given in the catalogues issued by the various firms specialising in this class of work.

Mass concrete has been largely used in the construction of sewers of 4 feet diameter and upwards. It is moulded in the trench and supported by centering until set. Elliptical sewers are also constructed in this manner. In recent years reinforced concrete has been employed for sewers of both types, the mixture being sufficiently stiff to admit of ramming.

Concrete tubes have been extensively employed in main-sewerage work for many years past, being supplied ready for use by firms who have taken up their manufacture.

Concrete tubes, unless strongly reinforced, should be laid on a concrete bed not less than 6 inches in thickness, and the concrete be brought up round the tube as far as the springing. By the omission of this precaution many failures have occurred. In tubes liable to internal pressure the concrete should entirely surround them.

The tubes have ogee, rebated joints which are luted with cement and the inside pointed up. In the case of the John Ellis & Sons 60-inch by 40-inch egg-shaped tube, the joint is a square recessed butt.

For sewers, the tubes are usually 3 feet in length, and are sometimes slightly reinforced by the insertion of three rings of steel ¼-inch diameter, spaced about 12 inches apart. The joints in the rings are welded. There are no longitudinal nor spiral rods. It is found that this simple type of reinforcement gives to the tube increased resistance to crushing.

Tubes are made capable of withstanding high internal pressure, and of resisting water hammer. They are constructed with various systems of reinforcement, and are in use in Great Britain and more generally abroad. It is not possible to refer to all the systems of reinforcement adopted. Generally they consist of various combinations of helicals and longitudinals, with the addition in some instances of circulars.

The "Bonna" system goes a step farther, and is essentially a thin steel pipe strengthened and protected, externally and internally, by reinforced concrete. The internal reinforcement is not taken into consideration in the stress calculations, but its presence is necessary to support the internal concrete. The dimensions of the cruciform steel bar forming the helicals, and the distances of the helicals from one another, together with the thickness of the concrete, vary according to the diameter of the pipe and the pressure to be resisted.

The pipes are frequently manufactured on the site of the works where they are to be laid. They are usually 10 feet in length.

"Bonna" pipes have been used for water mains at Swansea against heads of 246 feet and 500 feet, at Norwich for sewage rising main, head 131 feet, and at Clydebank for water head 390 feet, and are about to be laid at Leeds for water. They have been largely used on the Continent, and 119 miles of 10-inch to 49-inch water mains were in course of construction in Flanders at the outbreak of the war. They have also been largely used in Paris. Twenty years since the Municipality laid down one mile of 6-feet diameter as a rising main for sewage, head 115 feet, in a gallery alongside a steel-riveted main of same diameter. It has been found that the steel main requires considerable maintenance, and the concrete tube none.

The "Siegwart" reinforced pipes are constructed on a most ingenious system. A steel core is revolved while concrete is applied by machinery until the required thickness is obtained. Steel wire is then wound by the same machine spirally over the concrete, in one or more layers as required. The assembled longitudinal rods are slipped over the spirals, and further concrete applied by the machine until the pipe is finished. Siegwart pipes are made 15 feet long for diameters 12 inches to 18 inches, and 12 feet long for larger diameters.

Concrete tubes used as sewers may suffer damage from liquids being discharged into them at high temperatures, also by the discharge of acids. Instances have been recorded where concrete has perished when in contact with sewage. A paper was read by Mr. Sidney H. Chambers before this Institute in April 1910 describing the disintegratory changes in the concrete of the sewage tanks and conduits that occurred at Hampton. To ascertain if concrete tubes would be affected he caused a couple of 9-inch tubes to be placed in the tank for a period of eight months. One was coated with Dr. Angus Smith's composition. The coated tube was not affected. The uncoated tube was attacked over the area that was immersed in the sewage at high level, but which was not in contact therewith at low level. He does not state whether the uncoated tube had been, on removal from the moulds, dipped in a bath of solution of silicate of soda.

In the great majority of cases concrete suffers no damage by contact with sewage. Still, under certain conditions the lime in the cement may be attacked, and, as far as is possible, precautions should be taken to prevent such conditions arising. Further investigation is needed to ascertain why concrete occasionally disintegrates when in contact with sewage.

Concrete tubes are constructed to form manholes, water tanks, and cesspits. Sewers, reservoirs, manholes, &c., are constructed with moulded blocks of concrete, which are supplied by various manufacturers. As illustrating in greater detail the application of concrete to sanitation works, the author then described and illustrated the following examples:—

Failure and reconstruction of concrete-covered reservoir.
Temperature cracks in concrete reservoir wall.
Ejector chamber in concrete with steel-plate lining.
Concrete mole-forming sewage outfall into sea.
Circular hydrolytic tanks in reinforced concrete.

At the end of the Paper an illustrated Appendix was given descriptive of the methods and manufacture of concrete tubes furnished by various firms specialising in such work.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.

AN address on the war from an architect's point of view was delivered by Mr. Charles Kempson, F.R.I.B.A., A.M.I.C.E., the President of the Leicester and Leicestershire Society of Architects, at a meeting held under the auspices of the Society at No. 5 St. Martin's East, on Friday, the 22nd inst.

The war, said Mr. Kempson, affected their professional work in many ways. It had put in abeyance all the ordinary new schemes of building, and rendered the scale of interest on borrowed money higher. Banks preferred to reduce their overdraft risks, and to restrict and refuse new facilities. Building societies also raised their rates of interest, and generally refused to entertain new proposals. The outbreak of war at once drove up the price of metals and timber, while through men joining the forces builders found it difficult to complete contracts. In regard to the high rate of war risks insurance, he desired to express a pious opinion. Should any property, on our shores or in London, already insured against fire, be destroyed by being set on fire through a neighbouring property being fired by a bomb, no insurance could be claimed, the fire being an act of war, and 5*s.* per

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cent. was being asked to cover such bomb risks—over three times the usual fire risk. This appeared to him as being exorbitant on the part of insurance companies. The matter concerned architects, as the insurance money found the means of rebuilding.

The destruction of old-world architectural treasures in Belgium and the North of France was a source of special grief to architects. Many masterpieces of the Middle Ages had gone or were irreparably injured. English architects would wish to help in renewing the voids, but they would rightly hesitate before preparing designs to compete with the memories of buildings erected as the result of the genius of older and foreign generations. The present war was almost the first in which the destruction of buildings of note had been avowedly compassed. Those who remembered the Franco-German war of 1870 had not forgotten that the then French Cathedral at Strassburg, although the city was invested and besieged for some months, was spared, and that the Cathedrals of Rheims, Amiens, and Chartres, notwithstanding the fact that the respective towns were occupied, were not injured. Such masterpieces were in truth world possessions, and until this war had been held sacred. German "Kultur" had appeared, and it was not without "Kultural significance" that the Germans had expressed their capability and intention of rebuilding Rheims on better lines! It was too early for forecasts, but he thought that when the people of Belgium returned to their native soil shelter huts would be the first requirement, and these would be of a purely economic and utilitarian character. In the rebuilding of the towns and villages there would be much scope for town planning, and he hoped that the efforts of those interested in the better housing of the people would be on the lines of the best English Garden City work.

Mr. Pick, Mr. Stretton, and himself had appeared before a committee of the Town Council with the object of getting a relaxation in the width of carriage-way and the cost of the formation of secondary roads as distinguished from primary or main thoroughfares. It was suggested that the width of cheaper roads on the outskirts should be maintained at a spacious dimension by the use of grass margins. The cheaper the land the more serious in proportion was the cost of the road. Mr. Kempson paid a tribute to the memory of Mr. Stockdale Harrison, who was President of the Society from 1890 to 1892, and in conclusion said that after the war there would be a big building boom. It was to be hoped that the real work would be in harmony with ideas in regard to future developments.

BUILDING IN MEDIÆVAL TIMES BY THE GUILDS.

THE first of a new series of "craft" lectures, which have been a feature of the Carpenters' Company's educational activity for many years past, was delivered at Carpenters' Hall, London Wall, on Wednesday, the 20th inst., by Mr. C. Delisle Burns, M.A. The subject was handled on broad lines, and for illustrated slides the lecturer had resorted to mediæval manuscripts, to drawings, and to photographs of Belgian as well as English buildings.

In his opening remarks he pointed out that all work while the guilds were active was in a sense co-operative, for (1) the bond which kept the workers (administrators and workmen) together was not merely cash; (2) labour was not treated as a commodity to be bought and sold; (3) all had direct share in the results. Mr. Burns emphasised repeatedly that the mediæval guilds were united for other and higher reasons than because the members might thereby be in a better position to make money out of their work, although each man gained his livelihood out of his trade. The working men, no less than the skilled craftsmen and their apprentices, in the time when these guild houses or halls were erected were spurred on by such things as the glory of the craft to which they belonged or the honour of their town. The essential thing to remember in considering a mediæval guild is that it did not consist of masters and working men, but simply of work in common for a common end and for a definite purpose; each working off his own bat, so to speak, though with a common fund, out of which all could draw, and out of which all expense involved in the production of their buildings was defrayed. From the fund would be drawn money in time of unemployment, old age, or any other crisis; when a member died his guild looked after his burial and then looked after his family.

The range of the mediæval guilds went, however, beyond strictly economic considerations, for very much more than the mere livelihood of the members depended upon their work. Thus there was co-operative building—*i.e.*, all that kind of building directly done out of common funds and of common use. Mr. Burns divided this into three types. First came the town walls or defences (such as York or Chester or old London); these were the earliest result of the independence of craftsmen and traders. Then came the guildhalls and town halls, ranging from the halls of single guilds (*e.g.*, St. Mary's at Lincoln, Merchant Adventurers' at York, or the London City Companies) to the town halls (specially splendid in North Italy and in Belgium) which grew out of the belfries and campaniles—the first symbol of power in the hands of guilds. The final group of co-operative building was the churches and cathedrals. Where local lords were strong they destroyed these belfries and campaniles, so compelling the guilds to erect themselves common buildings under the ægis of the Church. Thus Laon, Soissons, and our own Lincoln are cathedrals built by the townsfolk for many uses besides those of religion. Mediæval towns were, in fact, working towards that civic ideal of "private simplicity and public magnificence." The town walls would be constructed, maintained, and manned by the various guilds; no contractor would be employed for the first two duties. Within the protection of those walls each guild might build its own guildhall for the dispensing of hospitality, the preservation of archives, or the discussion of civic questions. All the guilds produced their own mystery plays, and the properties would be stored in their Hall. Thus an early inventory of the still existing Merchant Adventurers' Hall at York records such items as two devils' cloaks, heads, two trumpets, a cow, and a door of hell.

Particular attention was given by Mr. Burns, in conclusion, to the beautiful guildhalls in Belgium. All of these were put up in a stage of the world's history when cash value was not the only value. The irresistible conclusion is that when men worked for something more than cash they were producing better work than when they recognised cash as their only incentive.

THE WAR AND ENGINEERING.*

UNDER the prevailing circumstances I had little or no alternative in the choice of a subject. We are all intimately connected with the war. The mechanical and other preparations necessary for action, the actual waging of warfare with all its attendant activities, and the readjustment of economic and industrial circumstances, directly involve engineering problems of the first importance and magnitude. It is with great satisfaction that one reflects that over 120 members of the Institution are serving in the active forces at the Front; but it is important also to remember Lord Kitchener's words, "all engaged in carrying out the great work of supplying munitions of war are doing their duty for their King and country equally with those who have joined the Army for active service in the field." Everyone cannot shoulder a rifle, but everyone can and should so order his life's activities as to advance the main idea of defeating the enemy by every form of ingenuity, military or civil, force of arms or trade.

Engineers may be specially useful in accomplishing these aims. War has become very largely a matter of engineering. No one for a moment will fail to realise the vital importance of the skill and experience of the strategists, and the bravery and physical fitness of the officers and men. But they must have the best of equipment, and under modern conditions this calls for the greatest ingenuity, the most reliable workmanship, and the enthusiastic patriotism of engineers and of many other classes of workers; since equipment embraces not only munitions, but clothing, food, and all the necessities of life under exceptionally severe conditions and ever-changing environment.

The first problem, and one which most searchingly tests administration, has reference to transport. This is due to the necessity of great bodies of men, with their impedimenta, having to be moved from point to point with the greatest possible rapidity.

The Kaiser to-day boasts his four or five millions of all arms. The lines of battle in the eastern and western theatres of war are nearly 1,000 miles apart, with intervening railways enabling armies to be moved from west to east and back as the calls of tactics demand. The Allies have legions equally numerous, and from each of the furthest ends

* Address by the President of the Junior Institution of Engineers, the Most Hon. the Marquis of Graham, D.L., C.V.O., C.B.

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of the world Britons have come in great convoys of steam transports, which dwarf in significance the Armadas of Athens, Carthage, and Rome, and England of old. The prowess of the ancient navigator has been superseded by the ingenuity of the inventor. The trireme and galleys have given place to the leviathan steamship for oversea transport, and road marching has been superseded by railways and road mechanically propelled cars.

Under the stimulation of invention the army impedimenta have grown enormously. The ancient had his spear, shield, and breastplate, and lived upon the cattle and products of the country through which he passed. The modern soldier himself carries more powerful implements of war, while with him must go light and heavy artillery and ammunition, bridge-making plant, pontoons, &c., rail-construction gear, trenching and wire-entanglement appliances, field telegraph and telephone, electric generating machinery for searchlights, &c., aerial machines, kitchen and provision paraphernalia, and field hospitals. The list alone serves to prove that war is a matter of engineering. Indeed, movable factories for repairing the mechanical appliances used by the Army form an important item, and here the internal-combustion engine as a prime mover has proved of great utility.

The power of marching must ever be an important quality in an army, but for long distances engineering has provided more expeditious means. As an example the movements of the British Expeditionary Forces by rail and steamship may be referred to. The Government required the British railways to collect from all parts—north, south, east, and west—troops whose numbers and impedimenta needed 350 trains, made up, on an average, of thirty vehicles each, and to detrain them at the ports of embarkation within forty-eight hours. This great feat was accomplished. As is now well known, most of the troops left from Southampton, and for weeks trains were passed over the lines during the night at the rate of five trains per hour. Such a performance is not only creditable to the organisation of the railways, but proves that the mechanical equipments and direction of the port were most efficient. To tackle the troops, horses, guns, limbers, and other accessories of battalions arriving in seventy-three trains within fourteen hours on successive nights is an unprecedented feat. It is right, however, that similar credit should be given to the harbour authorities at Marseilles, where twenty-eight vessels with our Indian troops and their munitions of war were dealt with in twenty-four hours. Remarkable work, too, has been done by the Russian railway authorities.

Although railways are a great assistance in connection not only with mobilisation, but with the movement of troops in the terrain of warfare, there is an enormous advantage in the greater flexibility of motor-traction routes. In the first place, railways, with their tunnels, are more easily rendered unavailable by destructive work, and the limitations of the loading gauge often create difficulties. Roads are easily repaired, and while neither road nor railway bridges over rivers and canals are immune from destruction, the temporary bridges replacing them need not be so strong for motor vehicles as for railway rolling stock. Again, the motor vehicle is not tied even to the highway; it may cross land, and ammunition, food, and all the other necessities of modern warfare already enumerated have been conveyed by motor lorries to troops confined in trenches stretching intermittently along a battle line of two or three hundred miles. The motor vehicles played a great part, secretly and silently, in the transfer of the British Army from their trenches 100 yards in front of the enemy on the slopes in the Aisne Valley, during the night of October 20, to the new battle front on the Yser. Such an unexcelled strategic movement by a great army would have been almost impossible without motor conveyances in addition to railways. The motor vehicle is of even greater benefit in the transport of the wounded from the fighting line to the base hospital, and thence to more permanent quarters. Many lives are saved through prompt surgical treatment of wounds, and much of the horror usually attending war has been avoided in the present instance because it has been possible, not only to ensure almost instantaneous relief, but to remove the wounded from the environment of battle.

In actual combative work also the motor vehicle has brought changes. Motor-cars, protected by light armour and carrying machine and quickfiring guns, are playing a prominent part, for instance, in clearing the roads of mounted Uhlan patrols, and in helping to eject the enemy lurking in villages and isolated buildings. The motor-tractor has solved the ever-present problem of mobility of heavy artillery. The British 12-pounder guns and 5½-in. Howitzers at Waterloo were the best of their kind; the historian tells us that the French officers were loud in their praise, but that the guns "suffered from the great evil—want of mobility." Nor were the conditions at the Crimea greatly improved. Since that period there have been introduced first steam sappers, as they were called—that is, light and quick traction engines—and more recently petrol-tractors. These, of course, have their limitations, but the power of ordnance has increased side by side with the power of traction, so that the efficiency of a gun in comparison with its weight is far greater to-day than in the old-time wars.

The material of which guns are made now stands three times the breaking stress of the old guns—it is now 55 to 60 tons per inch. The guns are accurately rifled and are breech-loading, with ingeniously conceived and beautifully made mechanism for rapidity of operation. The recoil is taken up by hydraulic cylinders, and the gun trained and elevated also independently of the carriage, and thus the rate of fire is at least 100 times faster than of old. By reason of the superior shot-propelling explosive powder used the velocity is enormously augmented. The perfection of sighting mechanism and the precision and accuracy of elevating and training mechanism have amazingly improved.

As regards Howitzers, the Germans have many 90-pounders with muzzle velocities of about 1,000 ft. per second. The range depends upon the angle of elevation and the resultant trajectory. These Howitzers work up to 65 deg. of elevation, and the high trajectory gives a steep angle of descent with a considerable remaining velocity; both qualities are effective for penetrating cupolas of forts, but they increase the difficulties of accuracy and limit the extent of the danger zone.

Experience has shown that the weight of gun or Howitzer which each horse can pull over field tracks is about 780 lb. The French and German guns, with gunners and equal ammunition, reach the limits for a team of six horses. Thus motor traction becomes a necessity for larger weapons—guns or Howitzers. There is no mechanical difficulty in the design or construction of larger pieces. The limits to weight, and therefore to power, for movable weapons are determined by the safe axle loads on bridges, either for roads or railways, and to a less extent by the solidity of the road bed. In view of the great weight of locomotives, it may be accepted that large guns can easily be transported by rail, especially when the weapons are so constructed that they can be desembled into several units for transport. Road bridges, however, are not always designed to accommodate large loads. It is difficult to set a figure to such limit of load. At the last International Road Congress it was considered sufficient generally that bridges should be capable of taking a 16-ton load; but in Lancashire boilers weighing 30 to 40 tons are frequently taken over the highways, and existing bridges seem to accommodate such loads. Therefore, 20 to 30 tons may be taken over the bridges on main roads, and as fortresses to be attacked are in the region of large towns with good approach roads, immense Howitzers become possible for attack. They can be taken by rail as near as is convenient to the point of emplacement, and thence by road. The German 16½-in. Howitzer, firing a 1¼-ton shell, is for transport purposes, taken apart to make four separate loads, and none of these, including its carrier, weighs more than 25 tons. Each is hauled by three road tractors, with reserves for supplementing the tractive effort through cables and drums on inclines or hilly ground. It will thus be recognised that, so far as traction is concerned, the limit has not yet been reached.

It is yet too early to draw conclusions on the subject of forts, but one cannot ignore the fact that in the design of guns and Howitzers, and in the construction of armour and other protection for forts, there are no limits in respect of weight, so that the engineer has full play for his ingenuity.

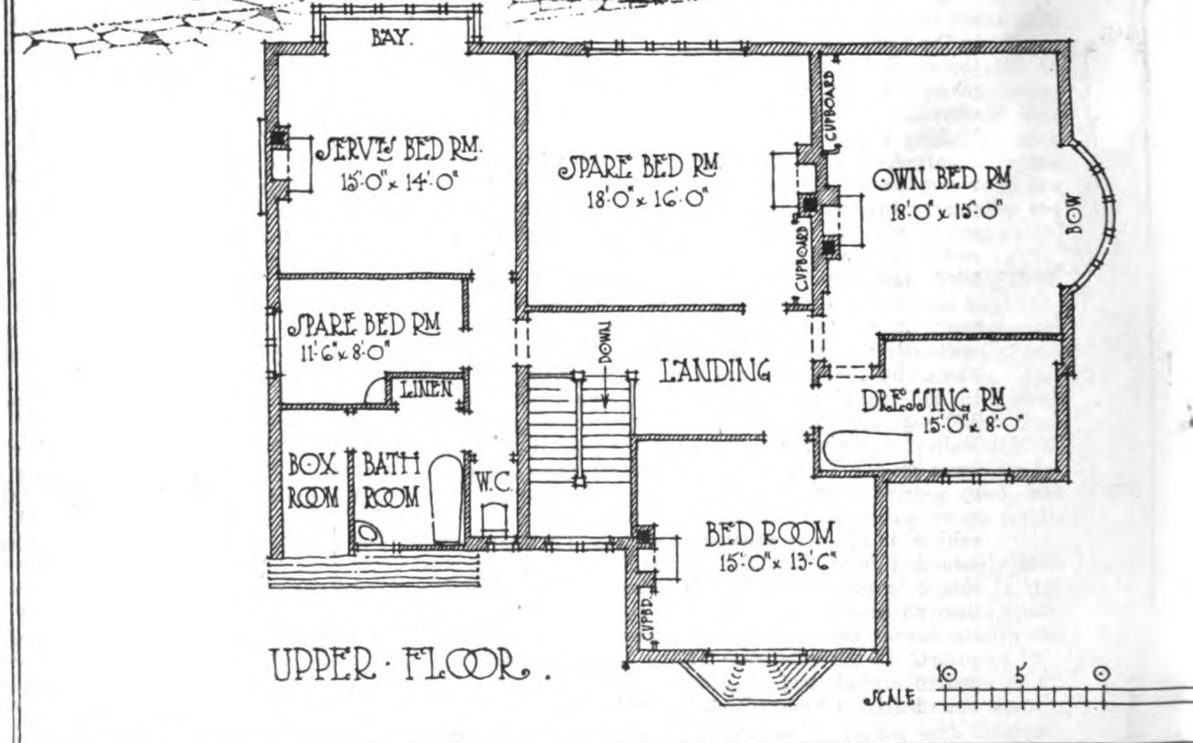
The extent to which the field gun and Howitzer is now used has resulted in a great development in the "digging in" system of entrenchment, which in turn has had great influence on reconnaissance work. The aerial branch of the service has thus come into great prominence. From the official despatches we learn that in the first six weeks of the war British aeroplanes flew an average distance of 2,000 miles a day. Nothing is hidden from the observer in the flying machine. He can see behind any screen of cavalry; he can detect the formation of trenches; he can observe the movement of troops by road, by motor 'bus, by train. He can estimate the numbers and even the proportion of different arms. From all this information the strategist can make deductions. Be it remembered, for instance, that an airman

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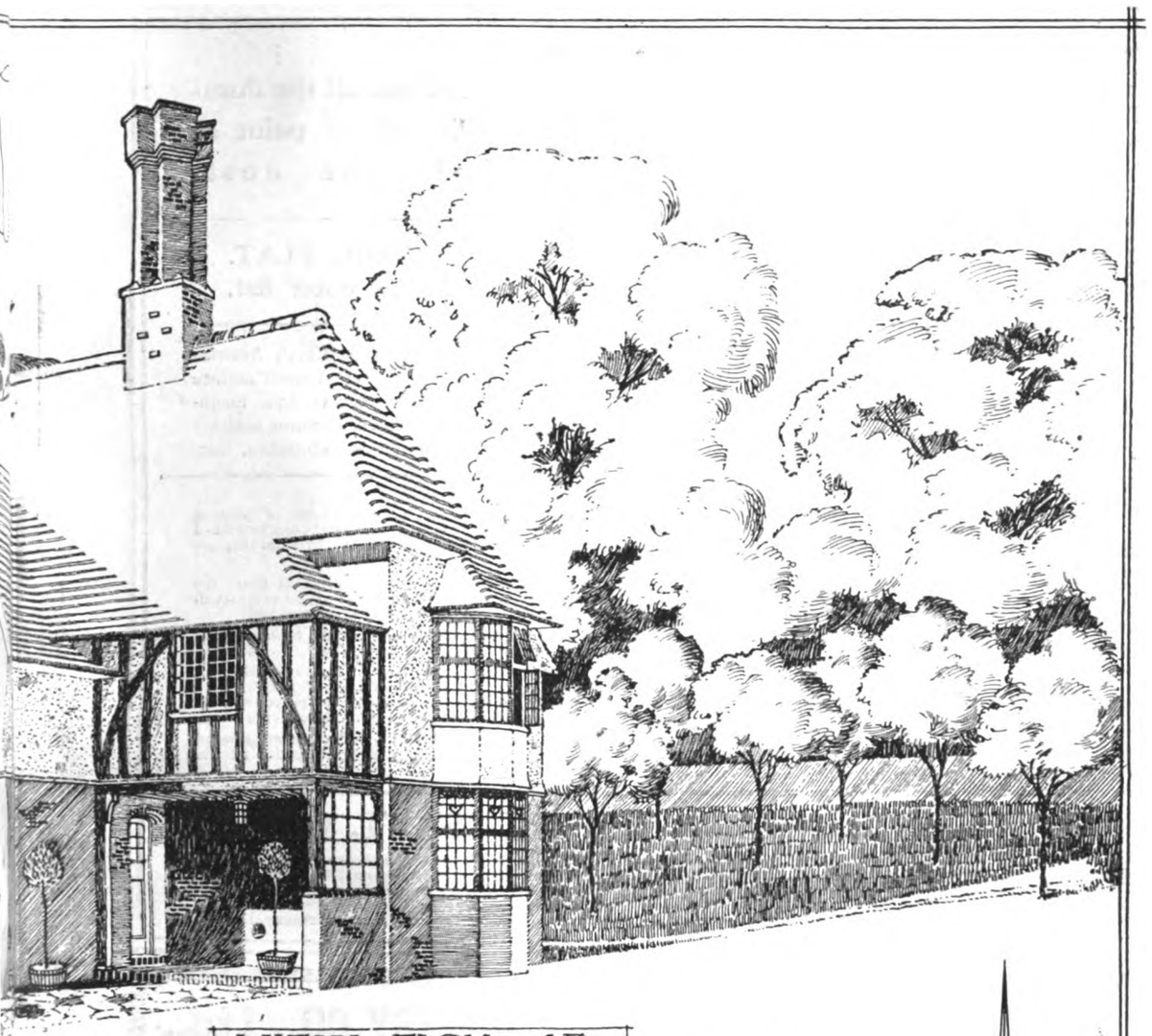
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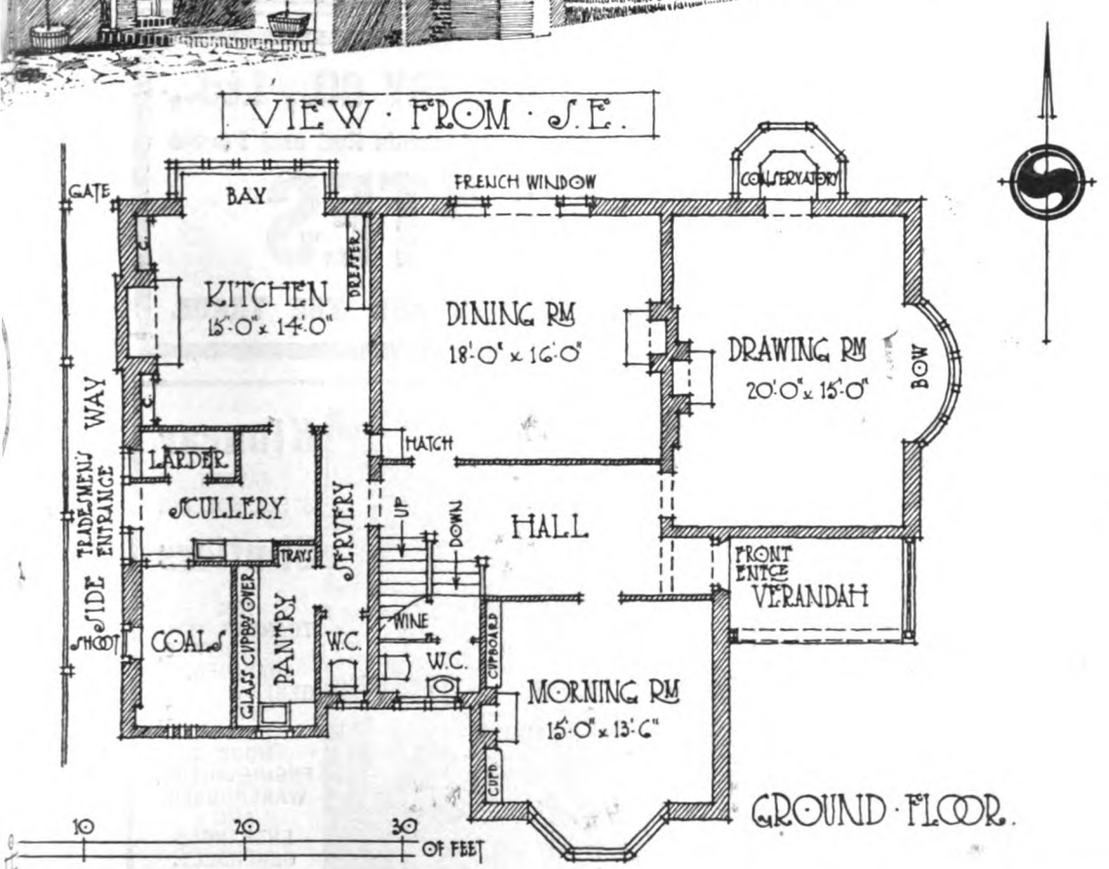


THIS house, which is shortly to be erected upon a well situated site in Kingsdowne Road, has been planned with a view to combining convenience of arrangement with a minimum of domestic labour. The accommodation is confined to two floors only, which are connected by an easy staircase, and afford spacious reception rooms and main bedrooms leading from a good entrance hall and landing over. The kitchen quarters are well shut off by a service lobby next dining room, and ample box space is provided off the bathroom and in the roof space above. Externally, the ground storey will be faced with Crowborough bricks, the upper part being rough-casted to a deep cream colour and roofed with dark red

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VIEW · FROM · S.E.



GROUND · FLOOR.

sand-faced tiles. The verandah, barge boards, and half-timber work will be treated with dark brown Solignum. Internally, the decoration will be simple and in keeping with the style of the house, the entrance hall being paved with red quarry tiles and having, like the dining room, a beamed ceiling treated with dark brown Solignum. The small conservatory is a pleasant feature of the drawing room, which will have a simple ribbed plaster ceiling and be artificially lighted by the "indirect" system. The house is to be wired for electric light and bells throughout, with gas service for fires in dining room and bedrooms, and cooker in scullery. The plans have been prepared by Mr. Moritz R. Martin, A.R.I.B.A., P.A.S.I.

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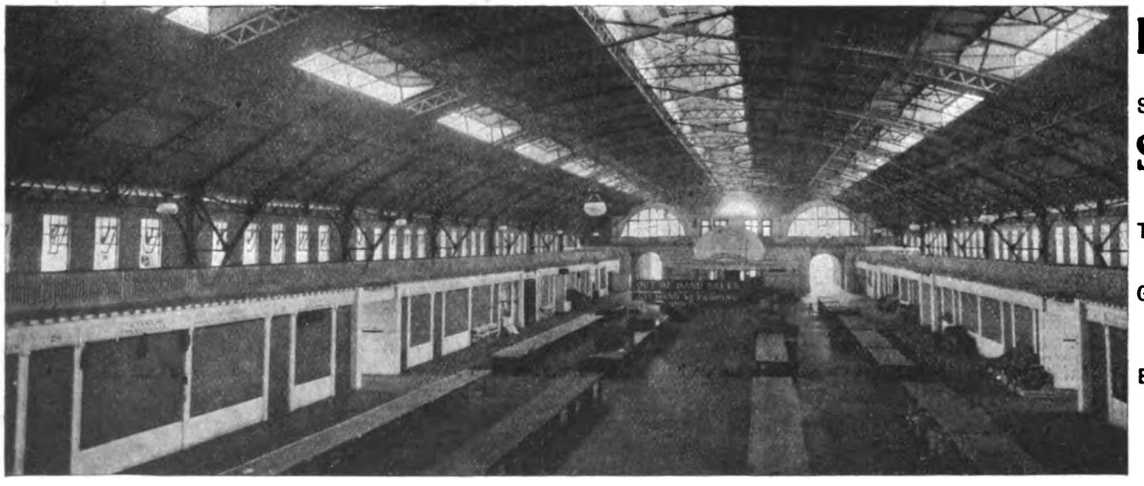
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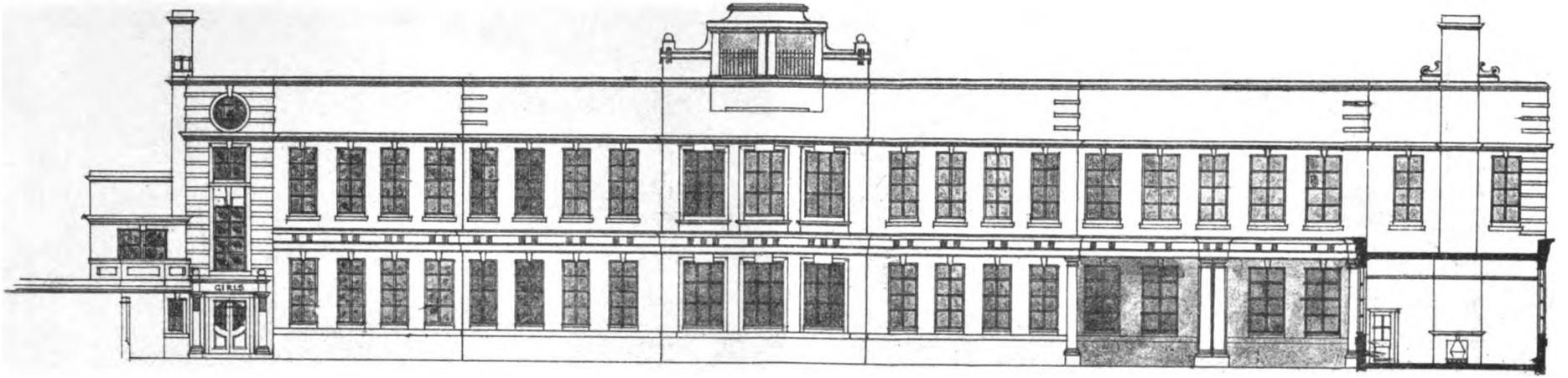
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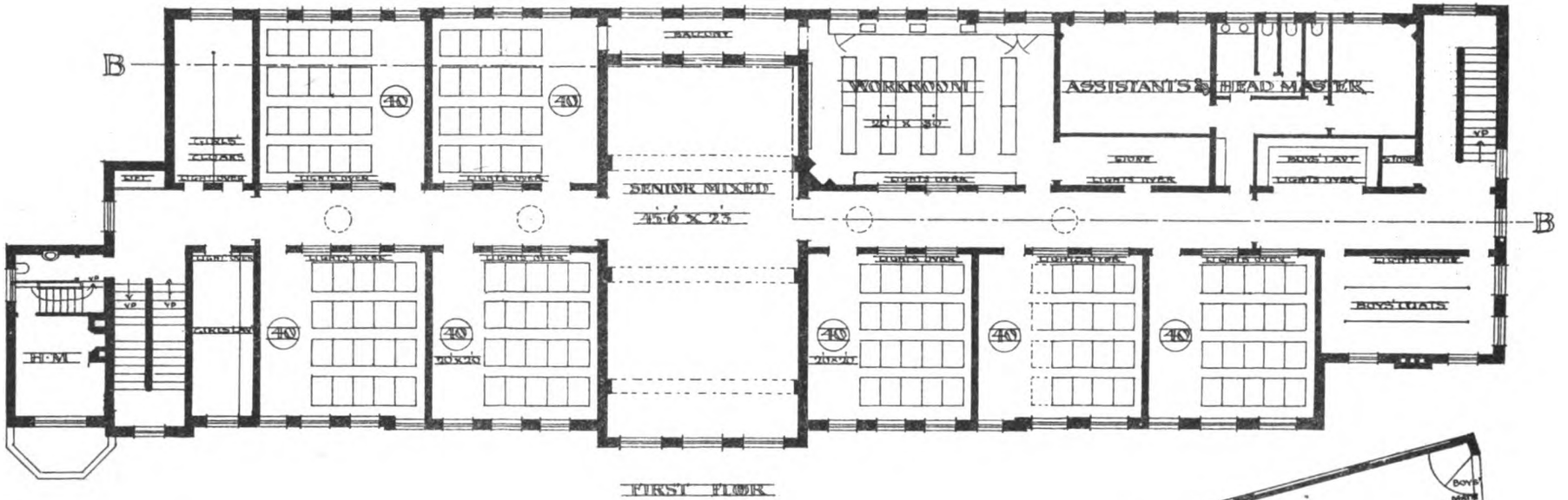
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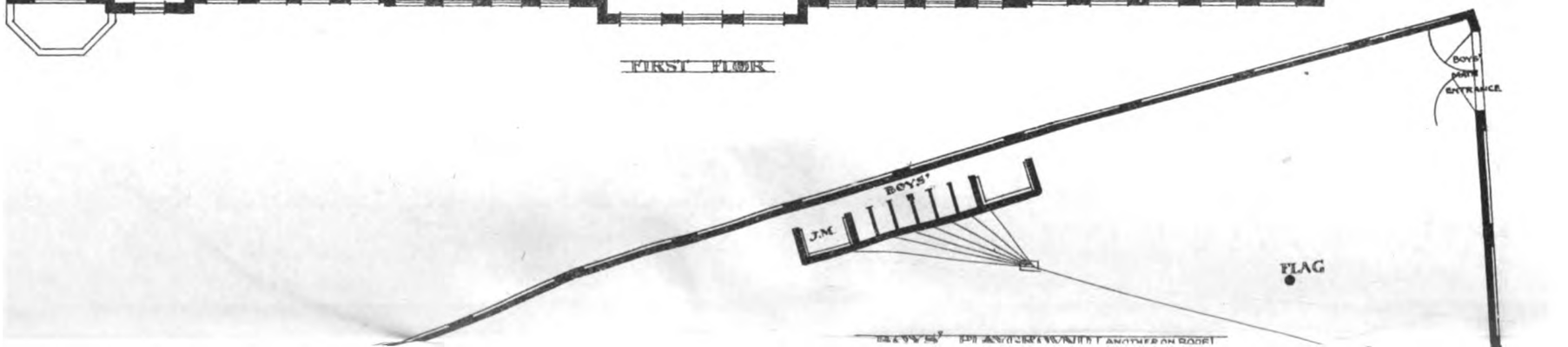
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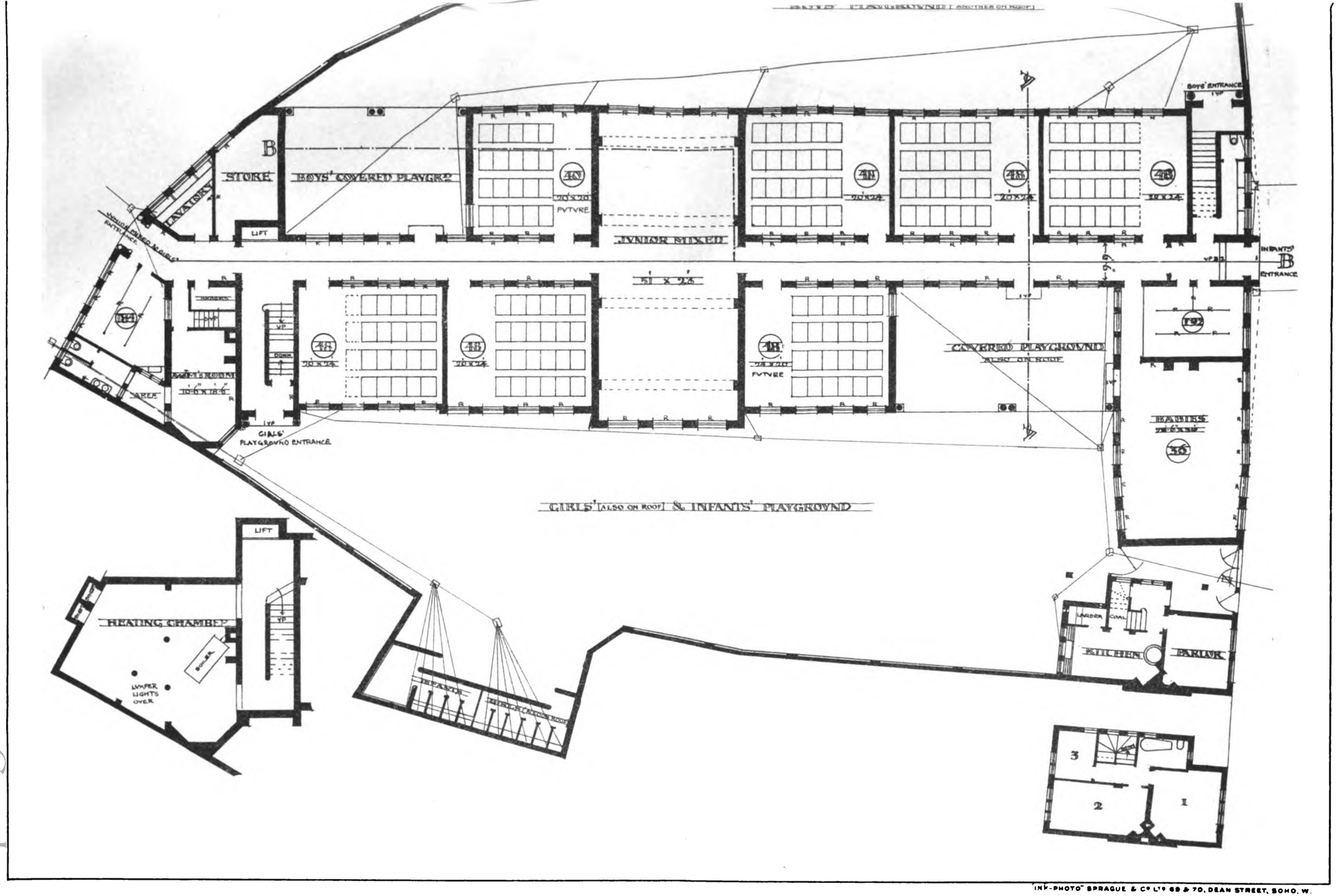
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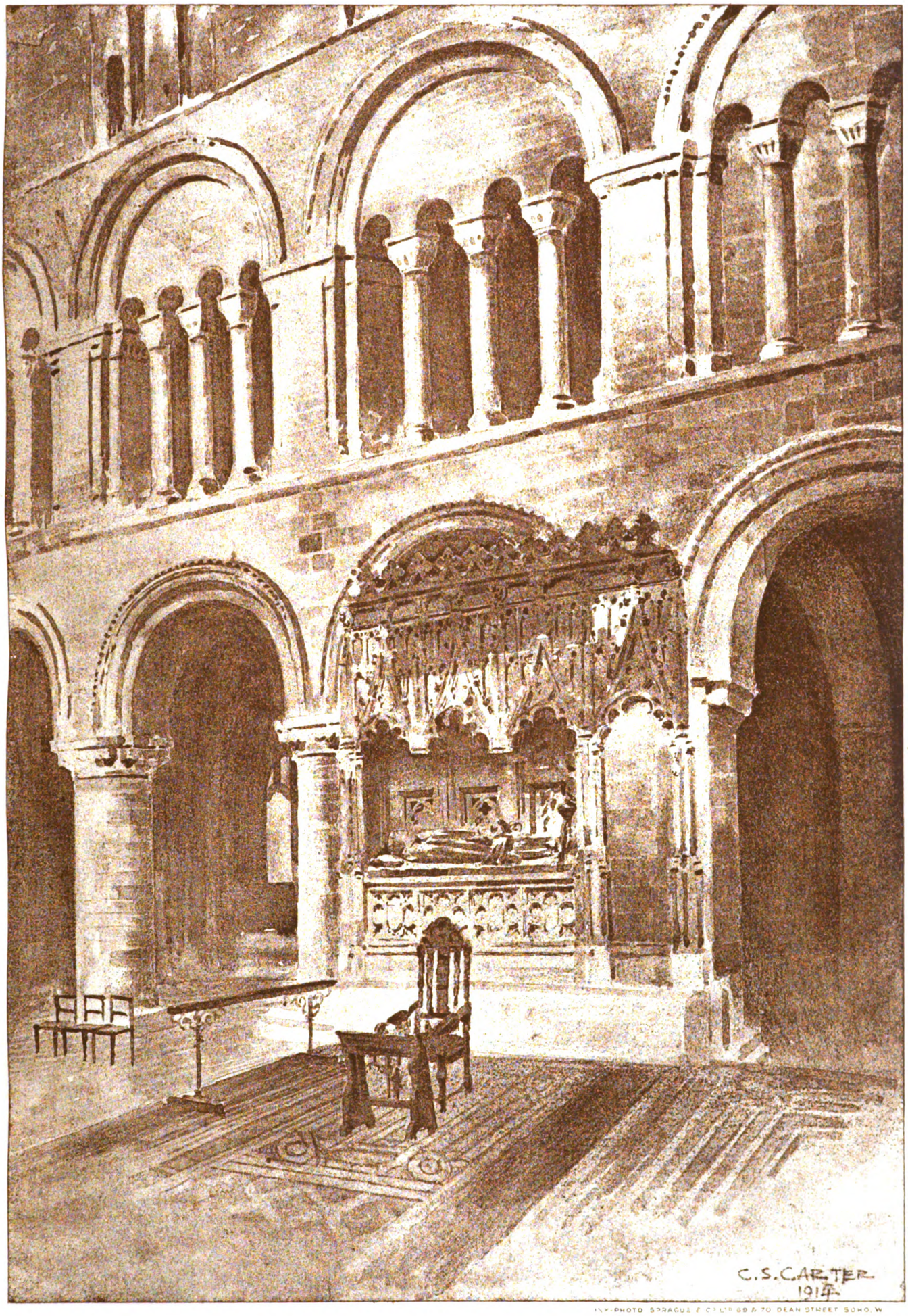


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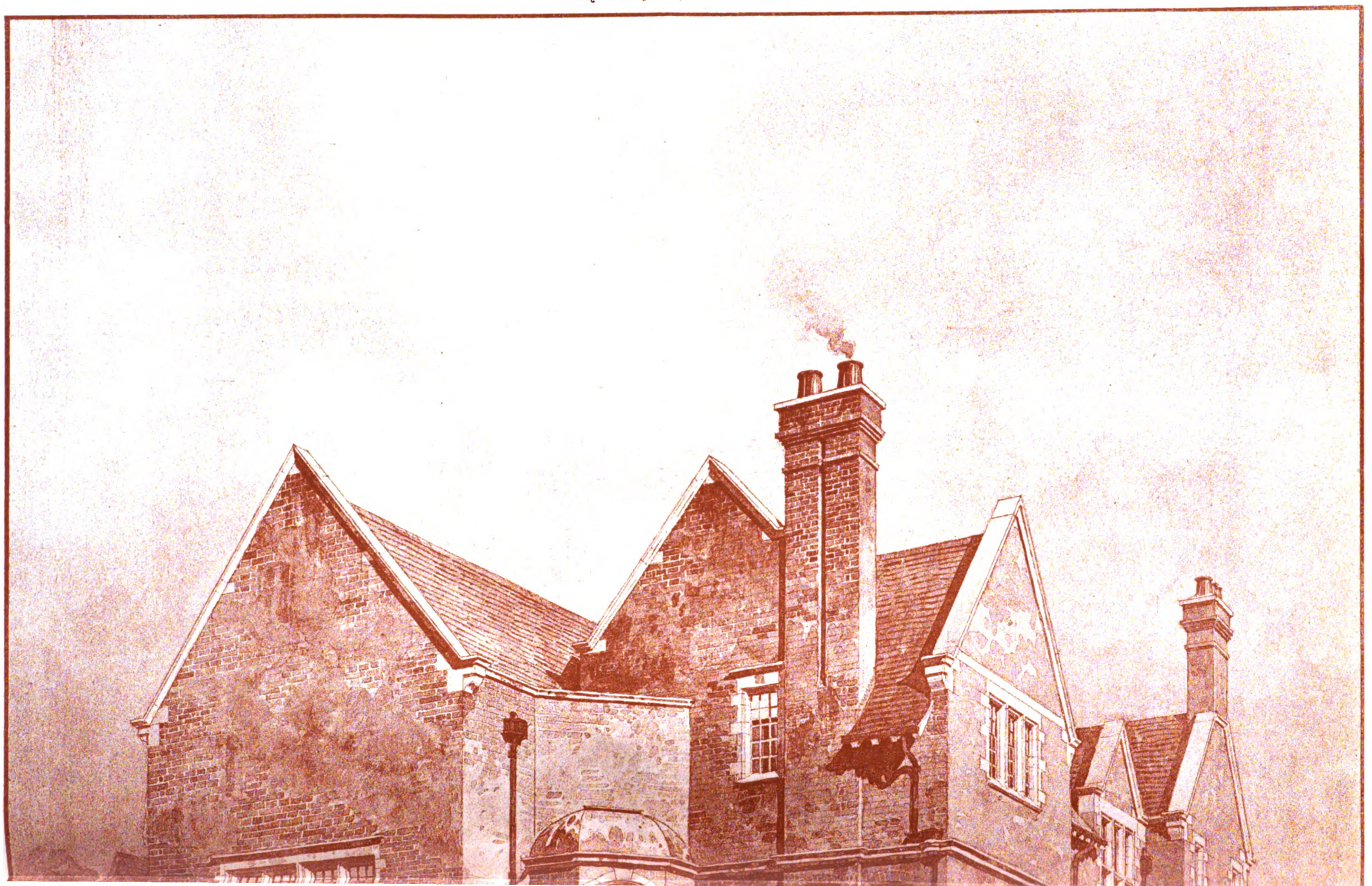
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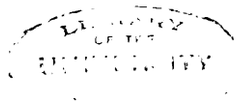
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at an altitude of 12,000 feet above London can, if the weather conditions are favourable, scan the whole coast line from Portsmouth to Yarmouth, and see even the shore cliffs of France beyond. The aeroplane observer also assists the gunner in range-finding and aiming. The Germans, for instance, "direct fire by means of squared maps and telephone. Thus when a target is found its position on the map is telephoned to such batteries as it is desired to employ against that particular square. In addition to the guns employed to fire on targets, as they are picked up others are told off to watch particular roads and to deal with any of the enemy using them. If a suitable target is discovered, the airman drops a smoke ball directly over it, or lets fall some strips of tinsel, which glitter in the sun as they slowly descend to earth. The range to the target is apparently ascertained by those near the guns by means of a large telemeter, or other range finder, which is kept trained on the aeroplane, so that when the signal is made the distance to the target vertically below is at once obtained. A few rounds are then fired, and the result signalled back by the aviator according to some pre-arranged code. Undoubtedly the engineer will find scope for his skill and ingenuity in devising means of increasing the reliability of the aeroplane, in effectively protecting its machinery and crew from gun-fire, and in devising a light form of gun of effective power and range, with a mounting capable of giving almost universal training and elevation and depression.

From first to last, as has been expressed by an American war correspondent accompanying the German Army, the impressions of modern war "are those of some great industrial undertaking with powerful machinery in full operation, and endless supply trains bringing up the raw materials for manufacture, rather than of battle as pictured generally."

The Navy is, perhaps, more directly illustrative than the Army of the application of applied science to the prosecution of war. A review of the development of the *matériel* of the Navy would occupy too much time to deal with tonight: moreover, the story has often been told. It would be difficult to name one of the departments of applied science which has not contributed to the evolution of the various types of warship as we know them today. The metallurgist has, in his laboratory, immensely improved the quality of the steel of which the hulls of vessels are made by the introduction of alloys and special forms of heat treatment; the frames and plates can now be made of high tensile material, which increases the resistance to stress, and at the same time enables a reduction to be made in the weight. This applies not only to the heavy plates of the ships of the line, but to the lighter protective plates on the latest high-speed cruisers, as also to the manufacture of armour plate. The ingenuity displayed in the mounting and manipulation of naval guns is as great, if not greater, than in connection with field artillery, while in connection with the gun itself there has been vast progress, so that high ballistics can be achieved without materially increasing the strains on the gun or its durability or its weight. This result is greatly contributed to by the remarkable developments made in explosive compounds. In connection again with propelling machinery, the most effective work has been done in thermodynamics. Thus, as Sir William Beardmore pointed out at the launch of a high-speed light-armoured ship recently, the vessel is fitted with guns of five times the muzzle energy of those of the same size and weight available twenty years ago, while the improvement in projectiles gives a still greater penetrative power. The armour again, although the weight per square foot is only about one quarter, is of greater resisting power than that of twenty years ago. From each ton of machinery it is possible to get four times the horse-power for driving the ship as compared with fifteen years ago.

There are other directions in which the engineer has had influence in connection with the war. It would be difficult to exhaust the list. I have already referred to harbour facilities for embarking and debarking troops. Equally important are the coal-handling appliances, so that warships are withdrawn from the fighting line for the minimum of time for re-coaling. They can now even "coal" or "oil" at sea, without stopping the vessels. Enormous demands again have been made on the textile industries. Armies suddenly raised or mobilised have to be clothed. Manufacturers have had placed with them orders, in some cases for as much as a million yards of khaki cloth, and without the great advance in weaving and other textile machinery, it would have been impossible to supply the material within the few weeks permitted. Corresponding inventive ingenuity has been operative in the cutting and sewing of uniforms and great coats, in the manufacture of boots, saddlery, and other similar necessities for the Army.

In all such instances the events of the past four months have collectively established the high efficiency of Britain as an industrial and engineering nation. Without such efficiency it would be impossible to maintain our Army in the field, even although financial resources were adequate. There has never been any lack of enterprise on the part of our manufacturers. Improvements in appliances in factories, as well as in the implements of war, can only be effected by experiments in chemistry, metallurgy, thermodynamics, and other departments of applied science.

When improvements have been made on mechanical appliances in the factory, it is incumbent on the worker to fulfil his share by making the best use of these, so that their function in the increase of output and the cheapening of production will be realised. Unless this is done, it would be idle to scrap old and buy new machines. Indirectly, again, labour will profit, because with the lessening of the cost of production comes a lowering of the selling price; and not only is the cost of living thereby reduced and the purchasing value of the wage increased, but the increased demand which ensues secures more continuous employment for the workers, a greater demand for labour, and a diminution in the number of unemployed. The cost of production, here as throughout the whole industrial problem, is the dominant consideration. Our educational system has greatly improved during recent years, there is a tendency towards closer relationship between the school and the factory, and it is possible to weld more tightly the connecting links. I think that much could be done by travelling as well as research scholarships in mechanical and other industries. In art such scholarships are numerous, and if an artist can learn much from the study of foreign works, surely the science student can learn much to copy, and perhaps more to avoid, by visiting foreign factories; his creative as well as his adaptive faculty would be stimulated.

Thus, in the maintenance of our traditions as an Empire, and of our supremacy in industry, the personal qualities essential are not dissimilar. In crises we must exercise restraint and calmness. In action, whether in the battlefield or in commercial pursuits, we must bring into play resource and diligence. We must ever remember that our individual prosperity is indissolubly bound up in the welfare and advance of the whole Empire. We have the great stimulus of an historic past, linked throughout centuries by deeds of self-sacrificing devotion and patriotism, unsullied by ignoble or barbaric acts. To all who have the privilege of sharing in this great inheritance and of passing it on enriched to those who come after us, I give one word of advice. It is, bear in mind always—whether you are a soldier or civilian—

YOUR KING AND COUNTRY NEED YOU.

ART IN LONDON.

BELGIAN ART AT BURLINGTON HOUSE.

To the War Relief (Winter) Exhibition at the Royal Academy Galleries a Belgian section has been added in aid of the artists of the small kingdom at present overrun by the Huns. The latest section forms one-sixth of the complete Exhibition, and includes work which is for the most part of mediocre quality, though there are a few—a very few—brilliant exceptions.

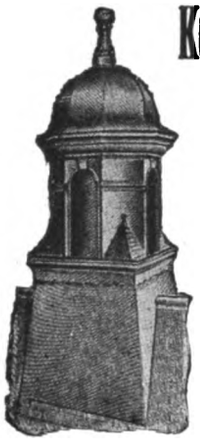
To commence with, the most—we had almost written the only—striking work brings to view a portrait of Mme. la Comtesse de Lalaing by Comte Jacques de Lalaing. It is a virile rendering of a charming subject, whose femininity is sympathetically presented in the profile face, the graceful pose of the head, and the rhythmic swing of the body, nor is the catalogue of good qualities thus exhausted. An ivory bust of the same subject by the same artist lacks most of the interest attaching to the oil-painting, but there is good work in it, and better work in his bronze bust "Génie" and excellent work in his marble "Souvenir de Florence."

M. Isidore Opsomer's coloured etching, "La porte bleu," combines good technique with an artistic sense of chiaroscuro, "distance," and colour. The same subject appears in Nos. 863 and 873, by the same artist, though a different view is taken in 863, and in both instances the process is merely "eau forte sans couleurs." In another subject the same artist exhibits an etching thus doubly treated, but in this case, "L'Eglise," the charm lies in the example "sans couleurs." A marble bust, "Nèle," by M. Charles Samuel, is a fine study of a female head, the slight indication of

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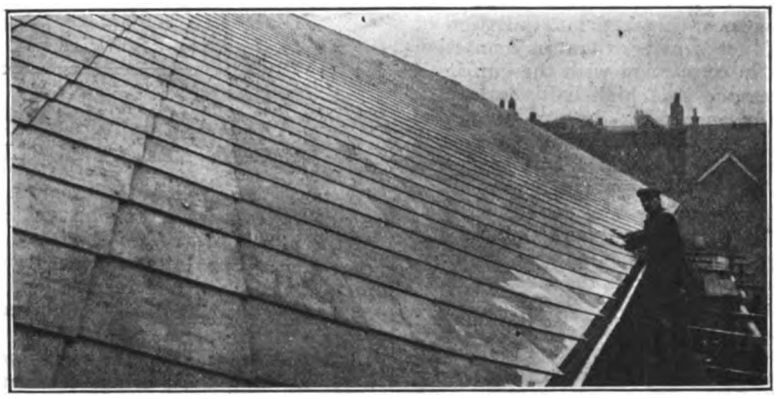
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the irides and pupils of the eyes ensuring against the "dead" effect so often noticeable in sculptured faces.

The course of our peregrinations brings us to a couple of paintings by M. Jean Delville, wherein Christ is the central figure. In "The Might of Light stopping the Demon of War" the dignity of this central figure is diminished by setting him on horseback. This and "The World's Hope" are too stiff and wooden altogether, though in general the conception of both is laudable. Miss Alice Ronner in "Roses" makes the mistake of depicting the flower-patterned table-cover as prominent florally as the roses themselves, while Mme. Cambier's "Fleurs" look far more dead than a study in "Nature morte" justifies. There is distinct quality in Miss Jenny Martigny's marigolds and poppies.

A terra-cotta head (No. 966) by the late Paul de Vigne is worthy of high commendation, and so, too, is M. Rousseau's "Jeune fille à la fleur," though the right arm is in effect shrivelled. M. Paul Dubois shows very good work in his plaster studies, "Une ombre qui passe" and "La mère et l'enfant"; and M. Puttemans' plaster "Portrait de Fillette," is full of charm and well portrays the graces of infantile innocence.

With a word of warm approval of M. Vincotte's plaster bust (No. 992) we must conclude this notice. The general level, though (as was remarked at the commencement) one of mediocrity, is seldom lowered beneath that level; but there are some fearful examples of modern "Art" which are extremely painful to view, and which may rank with certain condemnable work of English production.

MON'LITHCRETE STEEL.

AT the end of our letterpress will be found illustrations and, what is more, tables of strengths and prices of this construction (which is extensively and successfully used for concrete floors, foundations, roofs, bridges, staircase stringers, window lintels, piles, &c.), enabling architects, engineers, builders, estate surveyors, &c., in any part of the world to plan, specify, or order by telegram what they require.

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That the construction has come into great favour is shown by the fact that leading architects, engineers, builders, &c., are giving it the preference not only for work of the highest class, such as hospitals, public institutions, country houses, &c., but also for buildings of the factory and warehouse class and for large blocks of artisans' dwellings.

It is a big jump from an earl or millionaire's country house to a labourer's little flat, or from a big bridge to a window lintel, but such is the wide range of this construction.

The cost of the steel is, of course, more per ton than ordinary rolled joists, but in combination with concrete the strength is so much greater that they can be spaced 50 per cent. wider, the resistance of local loads is more than doubled, and there is practically no deflection.

SUPPLIES OF NATIVE TIMBER.

ENGLISH OAK *v.* AUSTRIAN OAK.

As a result of conferences arranged by the English Forestry Association with the Surveyors' Institution and the Royal Institute of British Architects, and in conjunction with other societies, energetic steps are being taken to encourage the demand for English oak in place of Austrian for purposes for which the native timber is eminently suitable. Owing to the recent sales of estates and other causes there are large supplies of English oak and other native timber available, and the English Forestry Association trust that at a time like the present they may rely on the cordial co-operation of all interests to assist in placing the native timber in a position to which it is justly entitled by reason of its valuable properties.

New markets are being organised for native timber, especially for elm, beech, and Scots pine, and full particulars will be forwarded on application.

There are large supplies of native timber available, and a unique opportunity offers to assist in making good a shortage of any timber owing to the effect of the war, which steps will not only help home industries with supplies, but will also much encourage the proper production of timber in this country.

Frequent applications are received by the English Forestry Association for the names of those who can supply native timber and goods manufactured therefrom, and firms are invited to write with particulars of stocks of native timber which they hold, or as to contracts which they could take up. The Association will willingly give every assistance where any difficulty is experienced in obtaining supplies of ash or other timber, and place merchants in touch with estates whence the timber can be obtained.

The English Forestry Association is not a trading association, and does not buy or sell timber or goods either direct or on commission. Its work is to create the demand and to organise supplies of the native timber, and to encourage home industries, but leaving it to the recognised channels to negotiate and supply the demand. All communications should be addressed to the Hon. Secretary, English Forestry Association, Farnham Common, Slough, Bucks.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Chesham Bois.—Catholic church. Mr. A. W. Young, architect, South Square, Gray's Inn, London.

Langley Marish.—"The Priory": additions. Mr. W. S. Dakers, architect, 14 Stratford Place, London. Mr. J. Deverill, contractor, 75 High Street, Slough.

CHESHIRE.

Macclesfield.—Proposed workmen's dwellings.

Thingwall.—Sanatorium, for the Birkenhead Corporation.

CORNWALL.

St. Germans.—Proposed scattered home, for B.G.

St. Ives.—Council school.

CUMBERLAND.

Wigton.—Infants' Council school.

DERBYSHIRE.

Buxton.—The Devonshire Laundry: re-building. Messrs. Garlick & Son, architects, Quadrant.

Chapel-en-le-Frith.—Workhouse: extension, for B.G.

DEVON.

Bovey Tracey.—Two houses and a shop. Mr. J. J. Stokes, builder, 8 Marlborough Terrace.

Torrington.—Five labourers' dwellings, Well Street.

DORSET.

Poole.—Children's homes, Stanley Green, Longfleet, for B.G.

DURHAM.

Hebburn.—Thirteen houses, Tweed Street, for the Palmer Shipbuilding Company.

New Herrington.—Twelve houses, for Mr. G. Cairns.

GLOUCESTERSHIRE.

Avonmouth.—Garage and offices, for Bristol Tramways and Carriage Company. Mr. W. H. Watkins, F.R.I.B.A., architect, 15 Clare Street, Bristol.

HAMPSHIRE.

Alton.—Workhouse: infirmary, for B.G.

HEREFORDSHIRE.

Ledbury.—Proposed Council school. County surveyor.

HERTFORDSHIRE.

Barnet.—Institution: chapel (£900), for B.G.

KENT.

Broadstairs.—Christ Church, Osborne Road. Mr. A. H. Scott, architect, 13 Old Square, London, W.C.

Sittingbourne.—Sanatorium (£3,800).

LANCASHIRE.

Bolton.—Council school, Crescent Road, Great Lever.

Edenfield.—Six cottages, Bury Road, for Mr. A. Worsick.

LEICESTERSHIRE.

Ashby-de-la-Zouch. — Two houses, Nottingham Road. Messrs. T. Orton & Son, builders, Kilwardby Street.

Hinckley.—Sketchley Dye Works: additions and alterations. Mr. W. T. Grewcock, A.R.I.B.A., architect, 8 New Street, Leicester. Messrs. J. Bentley & Co., contractors, 167 Clarendon Park Road, Leicester (£3,790).

Wigston.—Twenty-two workmen's houses, Moat Street and Horswell Lane. Mr. W. J. Clarke, Council surveyor.

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ENGLAND—*continued.*

LINCOLNSHIRE.

Brigg.—Proposed children's home, for B.G.

Grimsby.—Workhouse and infirmary: additions. Mr. H. C. Scaping, architect, Court Chambers. Messrs. Hewins & Goodhand, contractors, Eleanor Street (£23,000).

Lincoln.—Council School, Monks Road: infants' block.

MIDDLESEX.

Ealing, South.—Library (£3,400).

Hanwell.—Isolation hospital.

Hounslow.—Proposed lunatic asylum, Heston.

MONMOUTHSHIRE.

Blackwood, near.—Presbyterian Chapel, Oakdale Village. Mr. A. F. Webb, architect, Tredegar Chambers.

NORFOLK

Fakenham.—Workmen's houses, for the R.D.C.

Northrepps.—Six workmen's dwellings, for Erpingham R.D.C.

NORTHAMPTONSHIRE.

Thrapston.—Proposed isolation hospital.

NOTTINGHAMSHIRE.

Newark.—Proposed Council school, Albert Street.

SHROPSHIRE.

Yorton.—Proposed workmen's dwellings.

STAFFORDSHIRE.

Rowley Regis.—Technical schools, Wright's Lane, Old Hill (£1,500).

Tamworth.—Premises, Orchard Street: extension, for the Co-operative Society, Ltd.

Wolverhampton. — Proposed workmen's dwellings (£12,000).

SURREY.

Ash and Normandy.—Ash Vale Council School: enlargement.

Barnes.—House, Suffolk Road, for Mr. A. Harvey; also No. 28 Madrid Road: additions.

Cobham.—Two pairs of cottages, Tartar Hill. Mr. F. Higgs, builder, Surrey Works.

Croydon.—Proposed public elementary school, Long Lane.

Milford.—Proposed sanatorium and hospital, Sattenham Estate.

WARWICKSHIRE.

Coventry.—Technical Institute, Pool Meadow.

The Whitley Home: extension, for B.G.

WESTMORLAND.

Windermere.—Proposed police station, Craig Estate.

WORCESTERSHIRE.

Kidderminster.—Cottage homes, for B.G.

YORKSHIRE.

Catcliffe.—Wesleyan Chapel: school.

Flaxton.—House, Rawcliffe Lane, Clifton Without, for Mr. J. Law.

Huddersfield.—St. Patrick's R.C. school.

Mortomley.—Catholic Church: proposed re-building.

Stanningley.—Spinning mill. Messrs. Moore & Crabtree, architects, York Chambers, Cavendish Street, Keighley.

Whitby Spa.—Concert hall (for about 1,100 sittings), &c. Mr. G. T. Wellburn, A.R.I.B.A., architect, 115 Albion Road, Middlesbrough.

York.—Manor school, Layerthorpe.

WALES.

Aberdare.—Electric theatre, Market Street. Mr. G. Kenshole, architect, Station Road, Bargoed.

Glyn Neath.—Welsh Calvanistic Methodist Church.

Swansea.—Mining School.

SCOTLAND.

Dundee.—Mission church, Cochrane and Parker Streets, for the Rev. J. H. Shepherd.

Edinburgh.—Buildings, for North British Rubber Company.

Findochty.—W.M. Church. Separate trade contractors.

Glasgow.—Seventeen bungalow cottages, Dumbreck. Mr. G. Hamilton (of Dumbreck), builder.

House, Dawsholm Road, Temple, for Mr. James Taylor (of High Temple).

Linlithgow.—Workmen's cottages, for Messrs. Newlands & Sons.

Works: extension, for Nobel's Explosives Company, Ltd. (£8,000).

Musselburgh.—Elementary Board School and Grammar School additions (£11,000), for Inveresk School Board.

Old Kilpatrick.—Proposed school, Whitecrook.

Stranraer.—Factory, for the Plasmon Company.

IRELAND.

Abbeyleix.—Seventy-one cottages. Mr. J. Kennedy, Council engineer.

Ashford (Co. Wicklow).—Church. Mr. P. Munden (of Dublin), architect. Mr. P. Kinlen (of Rathgar), contractor.

Belfast.—Infirmary: additions, for B.G. Messrs. Young (F.R.I.B.A.), & Mackenzie, architects, 7 Donegall Square West.

Coleraine.—Proposed central dispensary, for Derry C.C.

Dublin.—Orthopædic Hospital, Upper Merrion Street: addition. Messrs. O'Callaghan & Webb, R.I.A.I., architects, 31 South Frederick Street.

One hundred labourers' cottages, South Dublin, for the County Council.

Dunamanagh.—Creamery. Mr. W. Stuart, architect.

Mullingar.—"Examiner" Offices. Mr. P. Menton (of Moate), architect.

Stabannon.—Parochial Hall. Mr. J. F. M'Gahon, architect, 9 Exchange Buildings, Dundalk.

Tralee.—Working-class lodging-houses (£20,000).

Youghal.—Proposed artisans' dwellings.

PATENT SPECIFICATIONS PUBLISHED JANUARY 21, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 29,787. Dec. 27, 1913.—Reuben Squire, 18 Westcroft Terrace, Bideford, Devon. Spray baths.

29,806. Dec. 27, 1913.—F. W. Campbell, 3 Devonshire Park, Bangor, Down, Ireland. Reinforced-concrete piles.

29,850. Dec. 29, 1913.—G. A. Booth, The Phœnix Iron Works, Derby Street, Preston. Firegrates or ranges.

446. Jan. 7, 1914.—H. M. Rogers, 4 Compton Crescent, Grove Park, Chiswick, W. Means for distributing sand on roads.

503. July 8, 1914.—J. P. Smartt, 14 St. James Row, Sheffield. Ventilating device.

2,643. Feb. 2, 1914.—F. J. Burton, Xela, Oakfield Road, Woking. Fastenings and stays for hinged windows.

6,245. March 12, 1914.—Frederick Woodward, 10 and 11 Lower Titchfield Street, Willenhall. Firebars for grates of ovens and other places where a fire is required.

7,085. March 20, 1914.—Chas. Ferrar, 36 Dagnall Park, Selhurst, London. Strengthening of substrata and apparatus therefor.

9,769. April 20, 1914.—M. M. Gillam, 372 Broadway, Flushing, Long Island, New York. Air supplying and heating device for improving the combustion in stoves and furnaces.

17,164. July 20, 1914.—The British Murac Syndicate, Ltd., and M. M. Dessau, 60 London Wall, E.C. Roads and ways.

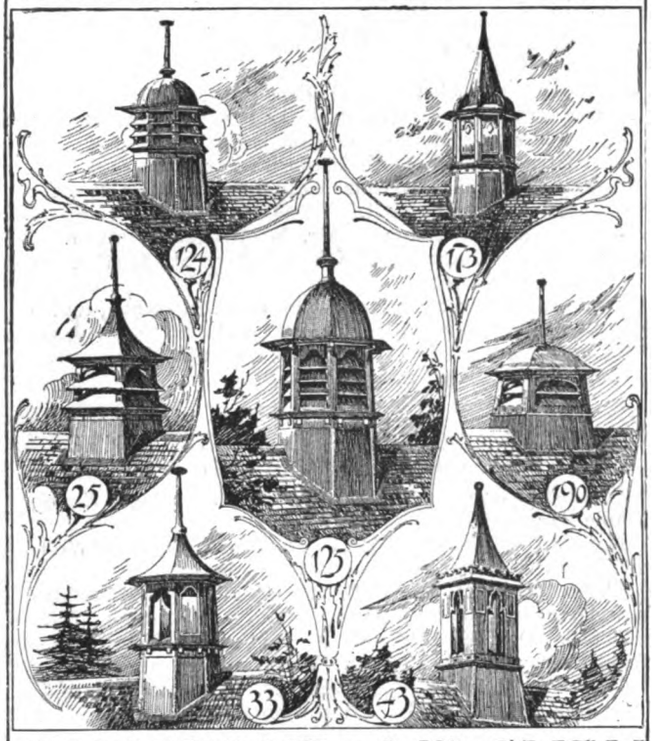
Any of the above specifications may be obtained from J. D. Roots & Co.

THE Sheffield Corporation have decided that the Lodge Moor Hospital extensions are to be carried out in three sections. In the first year the work is to comprise the extension of day nurses' home, extension of maids' home, stores block, alterations to present administration buildings, lecture theatre, discharge pavilion, &c., at a total approximate cost of £10,000. In the second year £20,000 worth of work will be completed, comprising three central ward blocks with connecting corridors, reception pavilions, workshop, and destructor house, &c. And in the third year the contract, to the amount of £33,500, will comprise the north three ward blocks, night nurses' home, private patients' block, eight cottages, &c.

THE Swansea Corporation has practically completed its case for the borough extension that is to be the subject of a Local Government Board inquiry next month. It is proposed to take in the parishes of Oystermouth, Llansamlet, Clase Rural, Penderry, Cockett (which includes Sketty, the residential suburb of the borough), and Bynea. This will give an added acreage of 17,964 acres, and an increased population of 29,000. The estimated increase in the rateable value will be about £200,000 per annum. In connection with the borough extension, a main-drainage scheme is being pushed forward, and this provides for the construction of a main sewer a distance of six miles to Oystermouth, and a sewer outfall into the sea off the Mumbles Head. The cost of this scheme is £325,000, and it provides for the drainage of the whole of the proposed added areas.

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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 29, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

LIVERPOOL.—Feb. 8.—The Corporation invite designs for workmen's dwellings, to accommodate about 500 persons, and proposed to be erected on the site known as the Rathbone Street area. Premiums of £100, £50 and £25 respectively are offered for the first three selected designs, and the Council have appointed Mr. Henry Hartley, F.R.I.B.A., as assessor. The first premiated design will become the property of the Corporation. A plan of site, together with a copy of the printed conditions and instructions, will be forwarded to the applicant on payment of a deposit of £1 1*s.*, which will be returned on the receipt of a bona-fide set of drawings. Mr. E. R. Pickmere, town clerk, Municipal Offices, Liverpool.

CONTRACTS OPEN.

ASHCHURCH.—Feb. 10.—For the erection of six cottages at Aston Cross, Ashchurch, for the Tewkesbury Rural District Council. Deposit 10*s.* 6*d.* Messrs. Protheroe, Phillott & Barnard, architects, 31 Promenade, Cheltenham.

ASHTON-UNDER-LYNE.—Feb. 1.—For supply and delivery of about 21 tons of structural steelwork, comprising roof trusses, stanchions, joists, angle brackets, &c., for the Stalybridge and Dunkinfield Joint Sewerage Board. Deposit 10*s.* 6*d.* Mr. C. J. Lomax, A.M.I.C.E., engineer, 37 Cross Street, Manchester.

BALDOCK.—Feb. 15.—For erection of six cottages with outbuildings at Hinxworth Place, Farm, for the Hertfordshire County Council. Mr. W. H. Crozier, land agent, 60 Fore Street, Hertford.

BEESTON.—Feb. 17.—For erection of pumping station, destructor, office and mess room, &c., on the sewage disposal site at Beeston, Notts, for the Beeston Urban District Council. Deposit £2 2*s.* Mr. W. H. Radford, C.E., engineer, Albion Chambers, King Street, Nottingham.

BLACKWOOD.—Feb. 15.—For erection of a Presbyterian chapel at Oakdale Village, near Blackwood. Send applications and £2 2*s.* deposit by Feb. 1 to Mr. A. F. Webb, M.S.A., architect and surveyor, Tredegar Chambers, Blackwood, Mon.

BROADSTAIRS.—Feb. 8.—For the construction of the following works at the proposed town depôt at the rear of Grosvenor Road—viz.: (*a*) Buildings, cart sheds, cottage, fencing, &c.; (*b*) weighbridge—for the Urban District Council. Mr. H. Hurd, C.E., town surveyor, Council Offices, Broadstairs.

CARTMEL FELL (LANCS.).—Feb. 8.—For erection of a cottage on their estate at Tower Wood, in the parish of Cartmel Fell, for the Windermere Urban District Council. Whole tenders. Mr. C. E. Hines, surveyor, Council Offices, Broad Street, Windermere.

COVENTRY.—Feb. 10.—For the enlargement of Little Heath Council School, Coventry, for the Education Committee. Deposit £1 1*s.* Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry.

ELY.—Feb. 4.—For extension of Ely (Cambridge) Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Postmaster, Ely, and H.M. Office of Works, Storey's Gate, London, S.W.

HANDSWORTH.—Feb. 9.—For repairs, &c., to sixteen houses at Ash Grove, Handsworth, for the Great Western Railway. The Engineer, Wolverhampton Station.

HEMSWORTH.—Feb. 19.—The West Riding Education Committee invite whole or separate tenders for the following works in connection with additional classrooms at the Hemsworth Kinsley Council School—viz.: Builder, joiner, slater, plumber, plasterer, painter. The Education Architect, County Hall, Wakefield. Send £1 deposit by separate letter to the West Riding Treasurer, County Hall, Wakefield.

HOLMES CHAPEL.—Feb. 4.—For erection of a proposed Council school at Holmes Chapel, Cheshire, for the Administrative Sub-Committee for Education for the Congleton Union area. Deposit £1 1*s.* Messrs. Alfred Price & Sons, architects, Sandbach.

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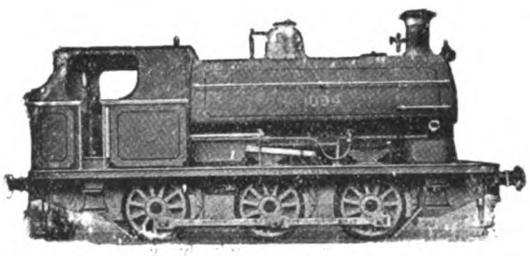
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HULL.—Feb. 8.—For erection of a hospital on the Grove House Estate, Newland, for the Guardians of Sculcoates Union. Deposit £1 1*s*. Mr. T. B. Atkinson, M.S.A., architect, Trinity House Lane, Hull.

ILFORD.—Feb. 9.—For erection of a building providing additional lavatory accommodation at the rear of the Town Hall, for the Ilford Urban District Council. Deposit £1. Mr. H. Shaw, M.I.C.E., engineer and surveyor, Town Hall, Ilford.

IRELAND.—For rebuilding premises at corner of Richmond Street and Linenhall Street, Derry. The work includes the removal of the existing buildings and the erection and completion of three shops with flats overhead. Mr. William J. Doherty, architect, 12 Castle Street, Derry.

IRELAND.—Feb. 10.—For the reconstruction of the old portion of their Portadown Station roof, for the Great Northern Railway Co. (Ireland). Deposit £2 2*s*. The Engineer's Offices at Dublin and Belfast. Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

IRELAND.—Feb. 13.—For building and fencing twenty-seven labourers' single cottages, for the Milford Rural District Council. Mr. S. Watters, clerk, Council Offices, Milford.

LEIGH (LANCS).—Feb. 6.—For erection of a United Methodist Church, Plank Lane. (Mr. W. Hugill Dinsley, architect, 12 Cleveland Street, Chorley.) Deposit 10*s*. 6*d*. Rev. E. Crosby, Wigan Road, Leigh, Lancs.

LITTLEHAMPTON.—Feb. 10.—For erection of an isolation hospital at Wick, near Littlehampton, for the Littlehampton Urban District Council. Deposit £1 1*s*. Mr. H. Howard, F.S.I., surveyor, Town Offices, Littlehampton, Sussex.

LITTLEHAMPTON.—Feb. 10.—For erection of public lavatories, &c., at Sea View Cottage, near Parade, for the Littlehampton Urban District Council. Deposit £1 1*s*. Mr. H. Howard, F.S.I., surveyor, Town Offices, Littlehampton, Sussex.

LONDON.—Feb. 4.—For preparing and laying new paved flooring to isolation ward B 5 and engine room at the Infirmary, &c., for the Guardians of Mile End Old Town. Deposit £1 1*s*. Mr. E. J. Harrison, architect, 9 Gray's Inn Square ,W.C. The Clerk to the Guardians. Bancroft Road, E.

LONDON.—Feb. 11.—For the repair and renewal of the iron and lead gutters, and also for the repair of the lanterns to the stable roof of the Council's depôt buildings, Stockwell Road and Combermere Road, Stockwell, for the Lambeth Borough Council. Mr. H. Edwards, C.E., borough engineer, Town Hall, Brixton Hill, S.W.

MALDON.—Feb. 1.—For erection of a recreation ground keeper's lodge and ladies' lavatory, also a gentlemen's convenience, on the Public Recreation Ground, for the Town Council. Mr. T. R. Swales, M.I.C.E.I., borough engineer and surveyor, Municipal Offices, Maldon.

MANCHESTER.—Feb. 2.—For supply of an organ, seatings, pulpit, &c., for a new church at Styal, Handforth, near Manchester, for the South Manchester Board of Guardians. Deposit 10*s*. 6*d*. Mr. Fred. H. Overmann, F.M.S.A., 49 King Street, Manchester.

NEWCASTLE-UNDER-LYME.—Feb. 8.—For the construction and erection of children's receiving home. The work comprises general structural work in connection with the buildings and out-offices, sanitary fitting, hot-water supply, gas fitting, drainage, fencing, laying out grounds, and other incidental works. Send application and £3 3*s*. deposit by Feb. 8 to Messrs. Chapman & Snape, architects, Newcastle-under-Lyme.

NEWTON-IN-MAKERFIELD.—Feb. 6.—For erection of thirty cottages in their district, for the Newton-in-Makerfield Urban District Council. Deposit £1 1*s*. Mr. A. Briggs, F.S.I., Town Hall, Earlestown.

NORTH SHIELDS.—Feb. 8.—For (1) the erection of stables at the Union Institution, 50 Preston Road, and (2) the extension of the Receiving Home, Military Road. Mr. Wm. Stockdale, A.R.I.B.A., architect, 81 Howard Street, North Shields.

NORWICH.—Feb. 17.—For erection of a pair of children's homes, for the Guardians. Deposit £1 1*s*. Messrs. Morgan & Buckingham, architects and surveyors, 1 Upper King Street, Norwich.

PENZANCE.—Feb. 8.—For the erection of workmen's dwellings on the Weeths Field, for the Town Council. Messrs. Cowell & Drewitt, architects, Lennard's Chambers, Penzance.

PORTSMOUTH.—Feb. 4.—For carrying out of extensions to the infectious diseases hospital at Milton, comprising the addition of three new wings, a nurses' block, extension of laundry, mortuary, &c., for the Town Council. Deposit £3 3*s*. The Borough Engineer, Town Hall, Portsmouth.

PORTSMOUTH.—Feb. 8.—For alterations and additions to Conway Street Council School, for the Education Committee. Mr. A. H. Bone, surveyor, Cambridge Junction, Portsmouth.

RADCLIFFE.—Feb. 13.—For the construction and completion of sixteen dwelling-houses (in eight blocks of two each) on the Stand Lane site, for the Radcliffe Urban District Council. Deposit £2 2*s*. Mr. W. L. Rothwell, engineer and surveyor, Council Offices, Radcliffe.

ROCHDALE.—Feb. 1.—For contract A. 102, erection of substation buildings (1915), for the Electricity Committee. Deposit £2 2*s*. Mr. C. C. Atchison, M.I.E.E., engineer and manager, Dane Street, Rochdale.

ST. HELENS.—Feb. 23.—For erection of a refuse destructor, together with all contingent works, at the Parr Depôt, within the borough. Deposit £2. Mr. A. W. Bradley, M.Inst.C.E., borough engineer, Town Hall, St. Helens.

SALFORD.—Feb. 5.—For general repairs to the exterior of the fabric of the Poor Law Institution, Eccles New Road, for the Guardians. Deposit £1 1*s*. Mr. F. Townson, clerk, Poor Law Offices, Eccles New Road, Salford.

SANDON.—Feb. 4.—For erection of a sanatorium at Sandon, near Chelmsford, for 110 patients, together with administration blocks, detached buildings, water supply, drainage, and sewage disposal schemes complete, for the Essex County Council. Send applications and £5 deposit by Feb. 4 to Mr. G. Topham Forrest, F.G.S., county architect, 79 Duke Street, Chelmsford.

SCOTLAND.—For the various works required in erection of a bungalow, Buckie. Messrs. G. Sutherland & C. George, architects, Aberdeen and Buckie.

SCOTLAND.—Feb. 2.—For extension of Coatbridge Post Office, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work, and not for separate trades. Deposit £1 1*s*. The Clerk of Works, H.M. Office of Works, Head Post Office, Glasgow, and H.M. Office of Works, 3 Parliament Square, Edinburgh.

SCOTLAND.—Feb. 4.—For the several departments of work of erecting a new ward block at the Hospital, Bellsprings Road, Annan, for the Board of Directors of Annan Combination Hospital. Deposit £1 1*s*. Mr. A. Tweedie, architect, 43 Lady Street, Annan.

SCOTLAND.—Feb. 8.—For the construction of a masonry lifeboat house, mass concrete and reinforced concrete (Considère system) substructure, and launching slipway, together with a timber approach thereto, at the Salmon Rock on the south-east side of Wick Harbour, co. Caithness, upon the foreshore and sea bed thereat, for the Committee of the Royal National Lifeboat Institution. Deposit £1. Mr. G. Jamieson, the local hon. secretary, Wick, or Messrs. Douglass, Lewis & Douglass, engineers and architects, 15 Victoria Street, Westminster, S.W.

SCOTLAND.—Feb. 16.—For erection of three double cottages for workmen at Lochgoilhead, for the Glasgow Corporation. Deposit £1 1*s*. Mr. J. Whitton, superintendent of parks, 249 George Street, Glasgow.

SHEFFIELD.—Feb. 2.—For the supply of materials and works required in connection with the erection of a transformer sub-station in Carr Road, Walkley, Sheffield, for the Electric Supply Committee. Deposit £1 1*s*. Mr. S. E. Fedden, general manager and engineer, Commercial Street, Sheffield.

SHIPTON BELLINGER.—Feb. 10.—For the erection of a pair of cottages for county roadmen on a site near where the road from Grateley Station to Shipton Bellinger crosses the road from Andover to Amesbury, for the Hampshire County Council. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

SOUTHEND-ON-SEA.—Feb. 12.—For construction of an electricity sub-station at Thorpe Bay, for the Corporation. Deposit £2 2*s*. Mr. E. J. Elford, M.I.C.E., borough engineer, Municipal Buildings, Southend-on-Sea.

TAUNTON.—Feb. 1.—For erection of a public convenience at North Town, for the Town Council. M. D. Edwards, A.M.I.C.E., borough surveyor, Municipal Buildings, Taunton.

WADDON.—Feb. 12.—For extension of buildings at Waddon Waterworks, for the Croydon Borough Council. Deposit £1 1*s*. The Borough Engineer's Office, Town Hall, Croydon.

WALES.—Feb. 4.—For alterations to Cardiff Head Post Office, for the Commissioners of H. M. Works and Public Buildings. Deposit £1 1*s*. The Postmaster, Cardiff, and H.M. Office of Works, &c., Storey's Gate, S.W.

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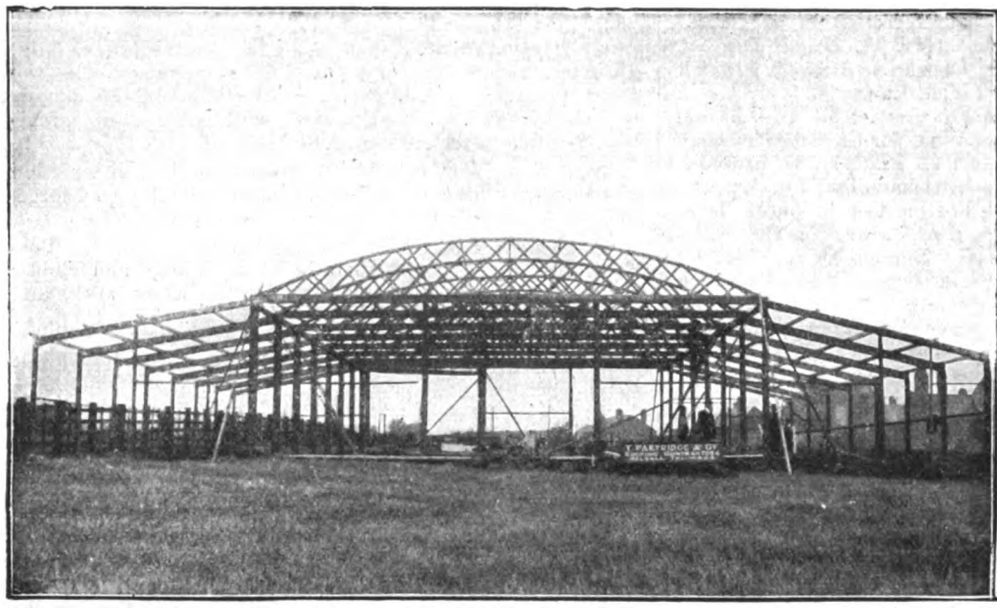
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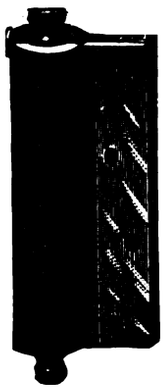
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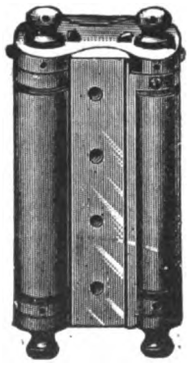


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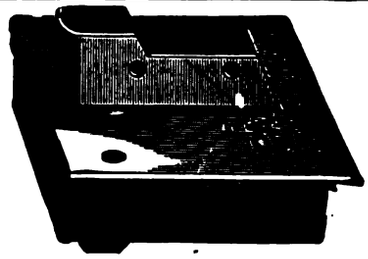




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WALES.—Feb. 5.—For completion of new shops, stores, stables, &c., in John Street, Abercwmboi, near Aberdare, for the Cwmbach Industrial Co-operative Society, Ltd. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—Feb. 15.—For erection of a boys' school at Hirwain, to accommodate 308 scholars, for the Hirwain Joint Schools Committee. Mr. T. Roderick, architect, Clifton Street, Aberdare. Send £2 2s. deposit to Mr. T. Botting, director of education, Education Offices, Aberdare.

WALES.—Feb. 19.—For erection of a secondary school at Ferndale, for the Rhondda Urban District Council. Mr. J. Rees, architect, Hillside Cottage, Pentre. Send £2 2s. deposit to the Accountant, the Council Offices, Pentre.

TENDERS.

BECKFORD (GLOS.)

For the erection of six cottages at Beckford, for the Winchcombe Rural District Council. Messrs. PHILLOTT & GEORGE, architects, Promenade, Cheltenham. Quantities by the architects.

Billings & Sons	£1,684	0	0
Matthews & Mullis	1,399	0	0
Chivers	1,360	0	0
Drew	1,350	0	0
Williams	1,280	0	0
JOHN KNOX, Evesham (*accepted*)	1,189	0	0

DARTFORD.

For additions to cooking plant, &c., at the Joyce Green Hospital, Dartford, for the Metropolitan Asylums Board.

Bradford & Co.	£940	0	0
Fletcher, Russell & Co.	882	0	0
J. & F. May	845	0	0
Slater & Co. (Engineers), Ltd.	834	0	0
Moorwood's, Ltd.	827	10	0
Benham & Sons	799	10	0
SUMMERSCALES, LTD., 4 Central Buildings, Westminster (*recommended*)	725	0	0
Engineer-in-chief's estimate	915	0	0

For provision of hose boxes with fire fittings at the Southern Hospital, Dartford, for the Metropolitan Asylums Board.

Hayward-Tyler & Co.	£342	10	0
Blakeborough & Sons	325	0	0
Hunt & Mitton	325	0	0
McGregor & Co.	294	0	0
Mills & Co.	255	0	0
Shand, Mason & Co.	246	17	6
Bird & Co.	229	10	0
Merryweather & Sons	218	0	0
Tylor & Sons	208	17	0
SINCLAIR & Co., 19 Eldon Street, E.C. (*recommended*)	179	0	0
Engineer-in-chief's estimate	220	0	0

LONDON.

For carrying out alterations to the mortuary keeper's residence, coroner's court, &c., for the Westminster City Council.

Cubitt & Co.	£1,659	7	0
Holloway Bros.	1,629	0	0
Patman & Fotheringham	1,571	0	0
Coulthard	1,541	0	0
Godson & Son	1,535	0	0
Garlick, Ltd.	1,522	0	0
Blake, Ltd.	1,410	4	1
Kirk & Kirk	1,435	19	0
J. R. SIMS, 60 Horseferry Road (*recommended*)	1,348	0	0

ST. ANNE'S-ON-SEA.

For the construction of an open-air swimming bath on the foreshore and the erection of dressing boxes, café, &c., for the Urban District Council. Mr. F. HARRISON, architect, Accrington.

Shorrock	£9,049	0	0
Croft & Sons	8,900	0	0
Moore Bros.	8,848	0	0
E. Taylor	8,820	0	0
Lewis & Sons	8,799	0	0
Smith Bros.	8,750	0	0
Cunliffe & Son	8,399	0	0
Ramsbottom & Son	8,350	0	0
W. EAVES & Co., LTD., Blackpool (*accepted*)	8,325	0	0

WALES.

For the erection of two shops and alterations to an existing shop at Abertridwr. Messrs. A. O. EVANS, WILLIAMS & EVANS, architects, Pontypridd.

R. Jones	£1.550	0	0
E. Jones & Sons	1,533	0	0
Julian	1.366	0	0
Hamilton & Millard	1,326	0	0
T. Williams	1.304	0	0
Davies & Lloyd	1,210	0	0
Gough Bros.	1.192	0	0
J. WILLIAMS, Abertridwr (*accepted*)	1,120	0	0

WHITLEY BRIDGE.

For erection of two small houses at Whitley Bridge, Yorks. Messrs. HOLT & SHEPHARD, architects, Castleford.

Foster & Son	£620	2	3
Jackson & Oates	579	0	0
Fairburn & Son	528	0	0
S. R. & T. Kelsey	600	0	0
Bevan, Norton	493	0	0
Hinsley	490	0	0
T. AULD, Bentley, Doncaster (*accepted*)	455	0	0

PORTABLE CHEMICAL FIRE EXTINGUISHERS.

THE British Fire Prevention Committee, after an extensive series of investigations, decided in July 1913 to meet the then increasing danger of badly made liquid chemical fire extinguishers, the defects in which had resulted in fatalities, by creating a standard pressure test for these appliances—namely, a five-minute test at 350 lb.—and later in the year a provisional constructional specification was issued.

This provisional specification met with the approval of the principal authorities concerned, and has served as a basis for the specifications since issued by various Government Departments and other public offices.

Various slight improvements have been suggested regarding the Committee's provisional specification from time to time, and further experiments have been carried out. The result is that the Committee is now able to issue its completed specification, which has come into force as from January 1, 1915, and covers all the general points as to size, strength, precautions against bursting, directions for use, facilities for testing, &c., of importance in such appliances.

In order to indicate that the Committee's requirements are by no means so severe as to handicap the legitimate endeavours of the trade concerned in the production of chemical fire extinguishers, it should be mentioned that various makers are supplying appliances, both to public tender and otherwise, at a reasonable figure, while complying with the requirements indicated in the Committee's specification, and the public purchasing such hand fire appliances are thus advised in future to assure themselves that the British Fire Prevention Committee's specification is being complied with in respect to gear ordered.

Copies of the specification are now available for free public issue, and lists of appliances complying with the specification will also be shortly prepared, both or either being obtainable from the Registrar of the Committee, 8 Waterloo Place, London, S.W., upon written application with enclosed stamped foolscap envelope.

Supplemental to the specification, the following recommendations are added as to the maintenance of such extinguishers, and these, in our opinion, are of vital importance:—

1. Printed directions, brief and clear, for operating and recharging to be posted up near the extinguisher, in addition to the directions on the apparatus.

2. All extinguishers to be examined once a year to see that they are full, that the contents have not been disturbed—e.g., that the liquid contains alkali in solution, and that the acid bottle is properly charged.

3. All extinguishers to be discharged once in three years, and tested by hydraulic pressure to 300 lb. per square inch (20.4 atmos.) for one minute and marked with the date of such test.

4. Those extinguishers in which the acid charge is "unsealed" to be re-charged once every twelve months.

The public are, however, reminded that portable liquid fire extinguishers are not the only form of portable first-aid fire appliance, but that ordinary buckets of water (together with hand pumps) are equally, if not more effective in the majority of cases, and, further, have considerable economic advantages for ordinary household, office, shop, and factory purposes.

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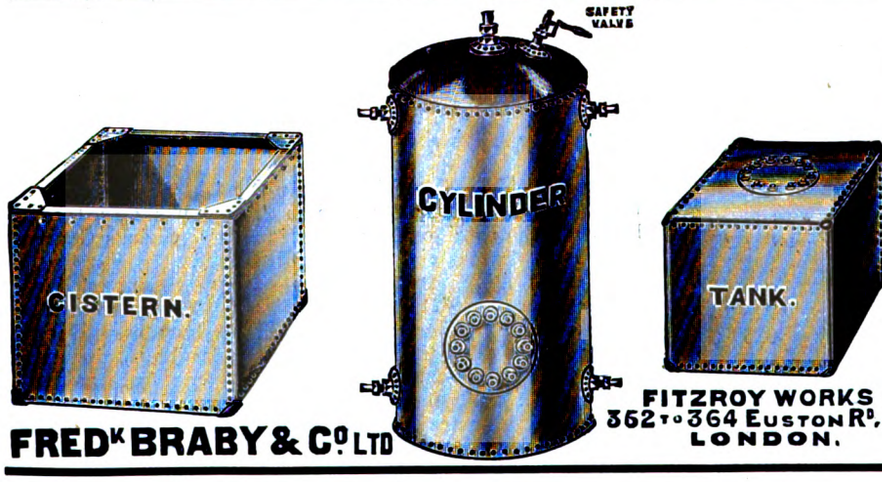
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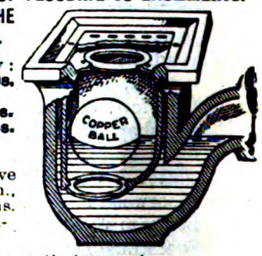
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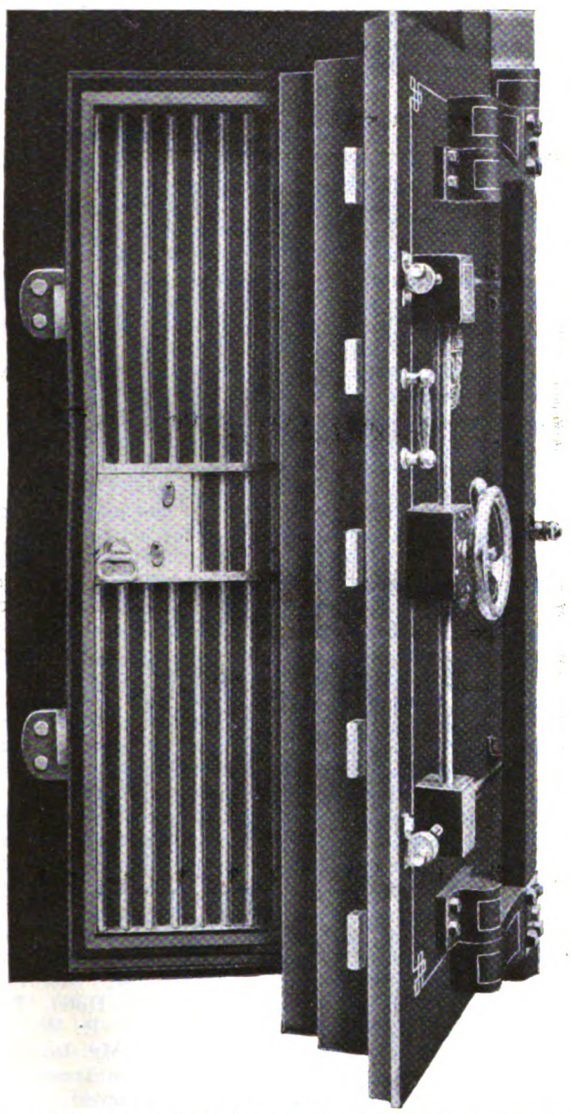
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AN "ANCHOR-RELIANCE" BULLION ROOM DOOR.

IT is almost a platitude, at the best it is a commonplace, to remark that the present is an age of specialists. Every business, every profession, is divided, sub-divided, and again sub-divided, into distinct compartments. This is no less true of the cracksman's calling: here the top of the tree and the biggest plums are reserved for the trained expert, just as among doctors or architects or even newspaper men. Bill Sykes is replaced by Raffles, the jemmy gives way to nitro-glycerine, the skeleton key to an oxy-acetylene blowpipe. It would be both curious and instructive to be told the way in which our safe-makers have kept ahead, during the past seventy or eighty years, of these gentlemen who have such confused ideas about *meum* and *tuum*. That account might well be written by such a man as Mr. Ed. Tann. Our present purpose, however, is only to illustrate one means adopted in the present year of grace to resist the safe-breaker, or rather the bullion-room or treasury-breaker, by Messrs. John Tann, Ltd., of 117 Newgate Street, E.C., and St. Stephen's Road, Old Ford, E. The bullion-room door here shown embraces all the latest know-



ledge on the subject, and is in itself of very considerable interest. Particular attention should be paid to the crane hinge and clenching mechanism (which afford an hermetical seal), and to the time lock (which checks the combination lock), for these mark two most recent advances in this branch of engineering. The door itself is built up of a combination of different materials, each of which has a special function to perform. It is *à propos* to mention that the firm of John Tann was, in 1843, under its previous name of E. Tann & Sons, the original inventor and patentee of the system of rendering safes fireproof by the generation of moisture, a system which is now used by nearly every safe manufacturer in one form or another. Consequently there can be little room for doubt that the construction of this latest door will be adequate.

It must not be supposed that John Tann, Ltd., are content to rest their reputation upon mere long descent. As we have already suggested, the motto for such a business as this must be "Progress." Messrs. John Tann are contantly having their work tested either in the laboratory or in an unsolicited way. Thus in December last an official of Farrow's Bank, Ltd., reported that a Tann safe at their Shepherd's Bush branch had "resisted all efforts to open it and preserved its contents intact," in spite of the use of nitro-glycerine by the burglars. Earlier in the year Messrs. Curtis & Harvey, Ltd., tested an "Anchor-Reliance" safe by exploding charges of gelignite at the most vulnerable points, with the result that "the explosive apparently shattered the locks, but notwithstanding this we were unable to open the safe by any mechanical means at our command, and so far as an external examination goes the safe was intact and had withstood this severe test very satisfactorily."

We could go on multiplying instances of practical and theoretical tests which have added to the credit of those "Anchor-Reliance" safes, but enough has been said to prove that Messrs. John Tann, Ltd., are still "going strong."

MESSRS. MATHER AND PLATT, LTD.

MESSRS. MATHER & PLATT, LTD., electrical, gas, textile, hydraulic and fire engineers, of Park Works, Manchester, have had, under the circumstances, a very satisfactory year's business in all their branches.

They have supplied batteries of filters to the Grahamstown Waterworks (South Africa), the Chesterfield R.D.C., Llandrindod Wells U.D.C., and many other waterworks at home and abroad, including the Malay States and New Zealand. An important installation has been erected near Calcutta to supply the district owned by the Alliance Jute Mills with drinking water for their workpeople as well as for general use in the mill. This installation has caused widespread interest in India on account of the exceptionally good results obtained when filtering River Hooghly water, even in its worst state. They are now engaged on a great installation for the Oldham Corporation comprising eighteen filters, each 9 feet diameter, to deal with nearly 3½ million gallons of water per day. A notable success has been achieved with their novel and special apparatus for cleansing the filtering medium.

During 1914 the firm have completed and delivered a number of the well-known high-speed enclosed self-lubricating vertical duplex gas engines. The engine has been further simplified in detail, and it now resembles very closely the high-speed forced lubrication steam engine.

The electrical department has been exceptionally busy, especially in the electrification of mines, collieries, and textile factories both at home and abroad. They have just completed the electrification of a flour mill where the power required is about 2,000 b.h.p.

The application of the "Grinnell" sprinkler and fire alarm, which gives such protection from all classes of land risks as well as from fires on ships, has been given special prominence.

During the past year Messrs. Mather & Platt, Ltd., have supplied turbine pumps for increasing duties. Large numbers of their multi-chamber type pumps have been installed in collieries, where the duties have frequently been in excess of 1,000 feet lift. They have further installed pumps of similar type for hydraulic purposes, generating a pressure head of 1,800 feet (800 lb.). Another useful field for the adoption of turbine pumps is for boiler feed duties.

The firm's textile department, which specialises in the complete equipment of works for bleaching, calico printing, dyeing, and finishing, has been busily occupied, although business has necessarily been curtailed since war broke out.

Messrs. Mather & Platt, Ltd., have lately taken up the manufacture of filter presses for all kinds of chemical purposes, yeast manufacturers, &c., which were formerly largely imported from Germany.

MESSRS. C. JENNINGS & Co., timber merchants and general woodworkers, of 978 Pennywell Road, Bristol, have sent us a list of glass which they have in stock, and which may be interesting to readers in view of the great scarcity at this time. They also hold large stocks of timber and plywood lying in London, Leicester, and other places.

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LONDON ASSOCIATION OF MASTER DECORATORS.

A MEETING of the Council of the above Association was held at the Holborn Restaurant on Wednesday, January 13.

The Conciliation Committee reported the result of the conciliator's award in connection with the dispute between Messrs. Green & Abbott and their employees, a copy of which has already appeared in *The Architect and Contract Reporter*.

The result of the action Dakin *v.* Lee was also formally reported.

The Secretary read a letter which had been circulated amongst the trade with a view of inducing firms of high standing not already members of the Association to join.

As examples of the work of the Association the success met with in the following matters was pointed out:—

(*a*) The reference of the Operatives' Union to the Board of Trade Conciliator on the question of wages, which was given in favour of the employers.

(*b*) The withdrawal by the Wallpaper Merchants' Association of the advance of 10 per cent. in the price of wallpapers.

(*c*) The complete success on appeal in the case of Dakin *v.* Lee, the judgment in this case being of the utmost importance to the trade.

Mr. J. H. Brettell (Bartholomew & Co.) was elected a member of the Association.

The Discount Committee, which met earlier in the day, reported the result of their proceedings, which were duly approved.

It was suggested that members of the Association might like to have copies of the recent circular to the Press, *re* "Painting in War Time," to circulate amongst their customers, and the Secretary was instructed to ascertain if any of the members would like to have supplies for this purpose.

The Secretary reported the replies to the appeal to the Society of Architects, Quantity Surveyors' Association, and the Royal Institute of British Architects on the subject of inserting a fair wages clause in their contracts.

It was resolved that a sum of four guineas be subscribed towards the deficit in the finance of the National Association of Master House Painters and Decorators of England and Wales, and that a letter be sent to this Association expressing the appreciation of this Association of the services rendered by them in getting the advance withdrawn upon wallpapers during the war, and in arranging for the conservation of a trade discount from all decorator's materials from the principal manufacturers, which is to come into force shortly.

It was resolved that the members of the Council be invited to submit designs of a certificate of membership with a view to issuing same to members of the Association.

VARIETIES.

BATH City Council on Tuesday last resolved to expend £7,750 upon the renovation of the bathing establishment, and to empower the committee to prepare plans for a new establishment in connection with a town-planning scheme.

OVER 700 members of the Institution of Electrical Engineers are serving in the Army and the Navy, chiefly in the Royal Engineers and the engineer units of the Royal Naval Division. Considerable numbers have also joined other branches of the military forces.

SPEAKING at a recruiting meeting in the Vale of Neath, a landed proprietor made the offer of ten freehold building plots to be given to the first ten men who enlisted that night, the only condition being that the applicant should build a dwelling-house within a reasonable period. At the close of the meeting the plots were immediately appropriated.

EDINBURGH Town Council, sitting in committee recently, discussed the clauses of the Corporation Provisional Order, under which the Corporation seeks power to let for hire (but not to sell or manufacture) electric apparatus and appliances for heating, cooking, &c., and also to provide and maintain showrooms for the exhibition of apparatus and fittings. By twenty votes to thirteen the Council decided in favour of the deletion of the clauses.

THE Durham Board of Guardians on Saturday have agreed that a complete scheme should be prepared for the erection of a receiving home and cottage homes to accommodate 100 children. It was stated that the Local Government Board had generally approved of the scheme for the construction of a new workhouse infirmary. An extension of the workhouse laundry was agreed to.

HIS HONOUR JUDGE RUEGG, K.C., during the hearing of a compensation case at the Hanley County Court, expressed the view that it was the duty of partially-disabled workmen who were in receipt of a compensation allowance to find work to suit themselves. A man, he said, should not wait to be asked to find work. It was his duty to find it for himself. Before the Compensation Act men went and found work for themselves, but now the attitude of some of them was to rest on their compensation. If a man, for instance, could not stand up to work, then he ought to find some suitable occupation which he could perform whilst sitting down.

THE new church of St. Michael, Little Coates, Grimsby, was consecrated this week by the Bishop of Lincoln. The new edifice incorporates within its structure portions of the old church dating back several centuries. The new stone is from the Weldon quarries, and the work has been carried out to harmonise as far as possible with the older work. Seating accommodation for 250 persons has been provided. Mr. Walter Tapper, F.R.I.B.A., was the architect, and the builders were Messrs. J. Jarvis & Sons, of Hackney.

THE Estates Committee of the Exeter City Council have considered a report from Mr. Harold Brakspear, F.S.A., from the old house found in King Street, during the demolition of some property there. Mr. Brakspear said it was a building most certainly dating back to Norman times, with additions and alterations in the fifteenth century and in Tudor times. It is noteworthy not only for its original date, but for the remains of the later additions, and it would be a pity if it could not be preserved. The city surveyor has been asked to prepare an estimate of the cost of restoring the premises.

THE L.C.C. General Purposes Committee have reported as follows concerning the coat-of-arms of the Council: "We reported on November 24, 1914, that we were taking steps to secure that the arms of the Council shall be reproduced on such county property as is appropriate without in any way superseding the use of the letters L.C.C. as indicative of the Council and its services. In this connection we have given direction for the arms to be displayed upon the blank shield appearing in the design of the seal of the Council. On this shield appeared, at the time the design was adopted, a cross of St. George, but as reported by us on March 14, 1911, we then arranged for this inaccuracy to be corrected, and the shield has since been without device thereon. We have adjourned until the conclusion of the war the question of the submission of a suggestion for a motto for the Council."

UNDER the auspices of the National Housing and Town-planning Council, a conference of the local authorities of the Western Midlands will be held in Birmingham next week to consider housing and town-planning administration, with especial reference to the administration of the new Housing Act during the period of the war. The gathering will be presided over by the Chairman of the National Housing and Town-planning Council (Councillor Harold Shawcross, of Rochdale). Papers have been prepared by Mr. C. W. Hill (housing estate manager, Barnet) on Barnet's housing scheme, Councillor George Cadbury, junr., on the limitation of houses to the acre, and the Chairman of the Conference on the cost of land development and house building under town plan schemes. A report is also to be discussed on the administration of the Housing Acts by local authorities in England and Wales, and a report will further be laid before the conference on rural planning.

THE annual meeting of the South Wales Federation of Master Builders was held at the Victoria Hotel, Pontypridd, on the 21st inst., the President (Mr. R. W. Moon, of Newport) in the chair. The Secretary (Mr. Isaac Watkins) submitted a report of the year, and the Treasurer the accounts and balance sheet. Both were adopted. The following officers were elected for 1915: President, Mr. Herbert Waring (Messrs. Waring, Cole & Waring, contractors, Neath); Senior Vice-President, Mr. J. Jones (Messrs. Jones Bros., Merthyr Vale); Junior Vice-President, Mr. T. F. Howells, Caerphilly. A revised form of contract, which had been prepared by Mr. T. Mansel Franklen (Glamorgan County Council), to meet the views expressed by the builders at a recent interview, was considered, and referred to the sub-committee to deal with. The Pontypridd and Caerphilly delegates drew attention to the practice of local authorities in inviting tenders for jobs varying in price from £400 to £4,000 without quantities, and a strong feeling was expressed against this practice as being unfair to the builders. It was resolved that all the branches be communicated with so as to secure a uniform practice throughout the district.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, February 5.

Institutes of Municipal and County Engineers (Metropolitan District): Discussion on Paper by Mr. H. D. Searles-Wood, F.R.I.B.A., entitled "Building By-laws and a Court of Appeal," at 8.15 P.M.

Monday, February 8.

Royal Academy: Lectures on Sculpture (3) "The Highest Period of Greek Sculpture," by Sir Charles Waldstein, Litt.D., Ph.D., at 4 P.M.

Wednesday, February 10.

Royal Academy: Lectures on Sculpture (4) "The Position of Painting in the Arts of Ancient Greece and the Decline of Greek Sculpture," by Sir Charles Waldstein, Litt.D., Ph.D., at 4 P.M.

Carpenters' Hall: Paper entitled "William Morris as a Craftsman," by Mr. H. J. L. J. Massé, M.A., at 7.45 P.M.

Manchester Society of Architects: Exhibition of Working Drawings, by Mr. P. S. Worthington, F.R.I.B.A., and Mr. J. B. Gass, F.R.I.B.A., at 6.30 P.M.

Thursday, February 11.

Society of Architects: Paper entitled "The Construction and Protection of Buildings in Relation to Fire," by Mr. A. Alban H. Scott, at 7.30 P.M.

Conference on Rebuilding of Belgium opens at Guildhall, London (five days).

LESSONS FROM GERMANY.

IN his paper read before the Architectural Association, Professor Lethaby only lightly touched upon some of the remarkable developments that have made German architecture noteworthy during this twentieth century. With the professor, many of us may candidly say that we do not like it; but we must recognise that modern Hanover, Strassburg, Magdeburg, and Cologne were not built for us to like, but were built for the gratification of German pride and ambition and for German pleasure in doing something different, and therefore, in their own view, superior to the efforts of other nations. As is usual in all modern German activities, their accomplishments in modern architecture are but the expansion and exploitation of ideas borrowed from their contemporaries in other countries. In this, indeed, lies the secret of much of their success in war, in manufacture, and in commerce, and we may say also in architecture, at least as far as success has been attained. For the modern German, whether we like his designs or not, has at least produced a modern architecture of distinctive character and different from any preceding architecture.

More particularly has this been evident in that part of architecture which is most closely connected with what in England we associate with the category of arts and crafts, the fittings and furniture, both fixed and movable, of a building. Modern German architecture may be said to have started from the principles and methods of the arts and crafts movement as applied in England to the design of furniture, to have adapted these principles and methods to the fitments first and then to the internal architectural features of a building, and finally extended the treatment to the external surfaces and forms.

This is what Professor Lethaby had in mind when he said that "the first thing in the arts which we should learn from Germany is how to appreciate English originality." The originality shown by English designers in furniture, glass, textiles, printing, and other branches of arts and crafts activity, which was our particular version of the "art nouveau" movement, was the basis of modern German architecture. On this basis they have impressed the peculiar tokens of German character, its coarseness, its forcefulness, one might even say its brutality. In so doing they have taught us the lesson that it is not necessary to go back to some ancient form of detail in order to invest the architecture of our time with the distinction of style; that style and styles are widely different things; that we have no need of Greek, Roman, Byzantine, mediæval, or renaissance motifs in order to find the means of expression in a real living modern architecture.

Professor Lethaby was, we think, particularly happy in his advocacy of the value of public works as an integral part of national life. He very rightly said that magnificent institutions were "paid for by taking money out of one pocket and putting it into the other." To some extent, as we have before to-day pointed out, this is true of the enormous war expenditure in the throes of which we now live, but there is this great difference that whilst, in the professor's words, "the buildings then add to capital and plant," war expenditure is largely directed to the production of things that are wasted—ordnance, ammunition, clothing, transport—and in this consists the waste of capital to which our leading banking magnates have recently referred. It is not that we are by war wasting capital that had already accumulated in times of peace, but that for a time the labour expended on munitions of war is no longer building up capital; there is nothing permanent to show for the labour that is being lavished.

With public works it is very different. Arterial roads, canals, docks, though they cost money and use up labour, are so much material capital which yields profitable interest to the community as much as if not more than if their cost were safely hoarded in the bullion vaults of the Bank of England. Even an increase in the millions of the National Debt may be advantageous to the nation if it is the effect of labour wisely expended on public works, which may become a more useful form of capital than money in the bank.

Nor is it only public works of strictly engineering nature that constitute profitable capital. Buildings generously planned have their utilitarian value and make for efficiency in public services of every description. The staff of a municipality that is comfortable and roomily housed save the ratepayers' money by economy of time and superiority of service. The spacious railway station of the modern American type makes a saving of time and temper for the passengers, as well as of promptitude and efficiency for the company's staff.

And the influence of fine buildings on the welfare of the community is not confined only to its utilitarian aspect. However consciously unrecognising may be the public of the beauty of a building and of the influence of that beauty upon their mental activity and their moral well-being, that influence exists and makes life happier and therefore labour more efficient. However ignorant a man may be of architectural style and detail, he is subconsciously affected by beauty of form and of colour to an extent that the Philistine would scarcely believe possible.

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It is beyond question that the phenomenal increase of wealth manifested in Germany during the last quarter of a century is very largely attributable to the wisely lavish expenditure of the Government on public works of every description, and this is a lesson which we may profitably learn from the enemy. Slowly we are perhaps beginning to learn the lesson. The expenditure of public funds on the improvement of our town planning, on the rescue and development of our inland waterways, on the better housing of our less wealthy workers, and, to a limited extent, on municipal buildings, are all steps in the right direction, but the steps require to be more regular, emphatic, and extensive.

A true note was struck by Professor Lethaby in his enforcement of the value of association amongst his immediate audience. In the professional life of our architects there is too great a tendency towards individual isolation, too little recognition of the value of co-operation. Herein is another lesson that we may learn from Germany. It has been said, with an appreciation of truth, if with an exaggeration of statement, that if two Germans should meet on a desert island the first thing they would do would be to form a club. In the modern development of architecture and building the range of activity has become so extensive that it is next to impossible for every man to be adequately acquainted with all that pertains to building, whether in the application of science or in the expression of art. We need in our professional world the recognition by each of the limitations of his own ability, of the helpfulness that might be obtained from the ability of others. Particularly would it be valuable if we had a fuller recognition of the value of consultants, as is done in the medical and legal professions. To be thoroughly proficient in nearly any branch of architectural practice at the present day it is almost essential that a man should be a specialist in that branch. To some extent this practice does obtain: theatres, hospitals, and other classes of buildings are the domain of specialists. But we need something more in extension of this idea. We need the association with others of which the professor spoke, by which we might be in touch with those from whom we could obtain ready assistance as well as, by contact and comparison, gain improvement in our own psychological and artistic development.

In the discussion on Professor Lethaby's paper, Sir T. G. Jackson made the point that "we have always been a people of individual tendencies, with an inborn distrust for everything that the Government does." To a large extent, no doubt, this has been due to our party system of government, which divides us sharply into two camps, one strongly partisan of the men that are in and the other equally confident in the men that are out. Hence the Government, of whichever side it may be for the moment, is always an object of distrust to many. The war has shown us that a Government, with the confidence of the whole nation, can do many things that no party politicians can do, and from Germany we may learn the lesson that a trusted Government, acting for the whole community, can initiate and carry through schemes for the advantage of all. It can use the credit and the resources of the whole nation in the prosecution of public works on a scale that would otherwise be impossible and so accumulate that valuable and profitable capital which generously executed public works become.

NOTES AND COMMENTS.

A highly interesting and important announcement reaches us from the Commercial Intelligence Branch of the Board of Trade as follows: H.M. Commercial Attaché for Russia (Mr. H. Cooke) reports that a desire has been expressed in architectural and art circles in Russia to free themselves from the predominant German influence on the architectural and decorative arts of the country, and to replace it with British ideas. With this end in view the Russo-British Chamber of Commerce, at the instance of Professor Kosiakoff, the President of the (Russian) Architectural Sciences Society, is inviting the co-operation of British Architectural Societies and persons connected with the building and decorative trades for the purpose of holding at Petrograd, after the war, an Anglo-Russian Building Trades and Decorative Arts Exhibition.

All communications in this connexion should be addressed to the Secretary, Russo-British Chamber of Commerce, 4 Gorochovaia, Petrograd.

We trust that the Council of the Royal Institute of British Architects will at once proceed to take its proper place in the lead of the desired British representation. The proposed exhibition might very well be held in connexion with the next international congress of architects, which, it will be remembered, it was intended should be held at Petrograd.

Mr. John Burns has signed an appeal, as President of the Cities and Town Planning Exhibitions Committee, for funds to replace the exhibits sunk in the *Clan Grant* by the *Emden* in the Indian Ocean in October, 1914. It will be remembered that early last year Professor Patrick Geddes received an invitation from the Governments of Madras, Bombay, and Calcutta to go there, with a view to advising as to the development of those cities and on social and housing conditions generally. He was also asked to bring with him the Town Planning Exhibition, which had been shown with so much success at the Royal Academy in 1910, and successively in Chelsea, Dublin, Belfast, and Ghent.

At the time of their despatch the sea route to India was believed to be secure, and only the ordinary risks were insured. Hence the calamity is complete, and the committee have no funds at their disposal with which to reconstruct the exhibit. On receipt of the news an emergency committee was formed, with a view to despatching to Professor Geddes a small representative collection. This appeal has met a friendly response, but more material is required if the whole exhibit is to be adequately replaced. Mr. Burns appeals for the sum of £1,000.

Subscriptions should be sent to the hon. treasurer, John Ross, C.A., 3 St. Helen's Place, E.C.

The London and District Electricity Supply Bill has been wrecked by the failure of its advocates to ensure a sufficient majority for the authorisation of its procedure. On the one hand, the Progressive minority of the London County Council is dissatisfied with the Bill as drawn, because they think the Council's authority is not sufficient. On the other hand, several of London's Borough Councils have already intimated their opposition, because they think themselves insufficiently represented.

The lecture by Mr. John Watson on "The History of the Building of a great Mediæval Church," of which we gave a Note last week, has been followed by a second part, in the course of which the author referred to the new plan of Holyrood Abbey devised by Abbot John as being a great improvement on that originally intended. The nave was widened, but within the limits of the old foundations; also a significant change was made in the design of the western façade by boldly projecting the western towers and extending these clear of the aisles. The original design of the centre gable was shown and explained. The evolution of the pier arcade from a Romanesque motif and the method of designing the vaults which ceiled the nave and aisles were described. In Holyrood, as in all other churches of the first rank, the bay design was tripartite, and here in determining the heights of the various stages a system of proportioning was adopted in accordance with structural necessities. As an explanation of the slow progress in carrying out the design in certain parts, Mr. Watson suggested that the Abbots devoted their energies to pushing on the

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THE CLOISTERS, NEW COLLEGE, OXFORD.
From a drawing by Mr. CHAS. S. CARTER, "The Architect" Travelling Student, 1914.

completion of what was particularly their own part of the structure.

The Corporation of the City of London have granted permission for the first conference of Belgian architects, municipal councillors, and others on the subject of the rebuilding of Belgium to take place at the Guildhall on February 11 and 15. On February 12, 13, and 16 there will be excursions to the sites of garden city suburb and municipal schemes. The arrangements have been made by the International Garden Cities and Town Planning Association in conjunction with the Town Planning Institute, the Royal Institute of British Architects, and the Surveyors' Institute, and it is desired that as little expense as possible should attach to the Belgians themselves. As it is proposed to follow the present series of meetings by others in various parts of the country, in order that architects living in the Provinces may more effectively be reached, a considerable liability has been assumed towards which contributions are asked. Gifts of money and offers of assistance may be made to the Secretary, Mr. Ewart G. Culpin, 3 Gray's Inn Place, Gray's Inn.

The annual Report of the Yorkshire Archæological Sociey refers to the protest of the Society against the further introduction of tramways into that part of York within the ancient walls, and mentions that two small concessions were obtained. Sub-clauses were inserted in the Order prohibiting the Corporation from fixing brackets or attachments to any buildings which are ancient monuments within the meaning of the Act, and giving the opportunity to the Commissioners of his Majesty's Works to object if any proposed shelter or waiting-room interferes with the archæological amenities of the city. Some houses of no interest in Bootham, York, have been demolished, and a length of the wall of St. Mary's Abbey exposed to the street; but a scheme

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which, up to that point, is excellent, is likely to be spoilt by a proposal to cut a gateway through the ancient wall. A suggestion made to the owner that the effigies at Coverham, which for years have been exposed to the action of the weather, should, for their better preservation, be placed in the church or other building, has not as yet been accepted. This is the more unfortunate as they are almost the only effigies in the North Riding which are not now so protected. Through the instrumentality of Mr. H. B. McCall, two fragments of a pre-Conquest crosshead, which for some time have been in the grounds of Myddelton Lodge, were restored to Ilkley Church and fixed to one of the shafts there. The Office of Works continues its excellent work at Richmond Castle, and has also executed some judicious repairs to the Round Tower, or south bastion, of York Castle.

"Whilst it is gratifying to know," adds the Report, "that a more intelligent interest is, on the whole, being shown in the preservation of our ancient monuments of all descriptions, there is still a vast amount of indifference and neglect to be overcome, and much disappointment is experienced in this branch of the Society's work. Even at the present moment we deplore the wholesale and senseless destruction of many most beautiful architectural gems on the Continent, not to mention slighter damage done in our own country to Whitby Abbey and the walls of Scarborough Castle by a nation which is supposed to pride itself upon its scholarship and intellectual attainments."

In the Report considerable space is given to an account by Mr. A. M. Woodward of the interesting work of making excavations on the ancient Roman site at Slack. The work here was continued intermittently until the end of September, four to six workmen being employed.

The work of exploration was materially advanced, and two interesting finds, a denarius of Trajan and a well-preserved iron axehead, of a plain type, discovered also at Newstead and Silchester, were made. The Society can now form a reliable opinion as to the scope, form, and texture of the buildings which originally occupied the site. In following the work a considerable quantity of pottery, more indeed than last year, was found. The coarse pottery, Mr. Woodward points out, is of considerable range and interest and several shapes not met with last year are represented, mostly in small fragments. Apart from the iron axehead mentioned, the finds in metal were negligible. Only one coin was found apart from the denarius of Trajan, but two weights, the larger of bronze, the smaller of lead, are considered worthy of notice. On the whole the results of the season's work are of considerable interest, not only for themselves and the further problems which they suggest, but also for the hopes they raise of the presence of other buildings in fair preservation in the fort.

At least two further seasons' work will be necessary for an adequate examination of the site, and the Roman Antiquities Committee make an appeal for funds for the prosecution of the work. It would, they feel, be a matter for deep regret if lack of funds were to prevent them carrying to a successful conclusion the excavation of what is already seen to be one of the most interesting and best preserved cohort camps in the North of England.

The Town Clerk of Leeds has been notified that the Local Government Board have directed an inquiry to be held "with reference to the formal complaint . . . alleging that the Town Council of Leeds have failed to exercise their powers under Part III. of the Housing of the Working Classes Act, 1890, in regard to the provision of working-class dwellings in the city of Leeds, and the case is one in which these powers ought to be exercised." This communication and the action which it foreshadows revives interest in a question that for some time has periodically yielded animated discussion. At the meetings of the City Council frequent representations have been made, principally by members of the Labour party, that a municipal housing scheme should be entered upon. The answer of the majority on the Council has consistently been that they were not justified in almost inevitably losing money on the promotion of a housing scheme so long as a sufficient number of unoccupied houses at moderate rentals remained without tenants. When property owners in the city decided to advance rents, about twelve months ago, there was considerable unrest in certain districts, and a body known as the Leeds Tenants' Defence League came into being. The League contested several actions in the County Court without success, and in March last they petitioned the Local Government Board, and made "formal complaint under Section 10 of the Housing and Town Planning Act, 1909." The burden of this was that there existed in Leeds a serious shortage of houses, that private enterprise was not attempting to meet the deficiency, and that the City Council "has persistently refused to re-house the people who have been dishoused, and also to provide houses to meet the present shortage." Three maps were enclosed with the petition, which was signed by four resident householders, and it was pointed out that "outside the central undesirable area . . . there are only sixty-five houses in the whole city at rentals from 5*s*. 1*d*. to 7*s*., and only 118 between 4*s*. 1*d*. and 6*s*. per week."

The annual report of the Newcastle Society of Antiquaries stated that the dark cloud of war which had hung over the nation for the past six months had naturally thrown its shadow upon the operations of the society.

"But," it proceeded, "we must not forget that at the time of its establishment, 102 years ago, its founders had lived for years under comparable conditions. Two years and more were then to elapse before the nation emerged victoriously from the Napoleonic wars which had threatened it so long. Notwithstanding this, our predecessors in those troublous times calmly combined to pursue their favourite studies. With their example before us we must not permit, and have not so far permitted, national excitement to extinguish our interests in the pursuits which our society has so long encouraged.

"In this connexion," the Report continued, "it is a matter of poignant regret and reprobation that the governing powers of Germany, a people professing advanced education and much addicted to studies like our own, have permitted the wanton injury of the beautiful old town of Louvain, the Cathedral of Rheims, architectural monuments in Ypres, and other historic places in Belgium and France. The spirit of Antiquity enshrined in sumptious buildings cries out in opposition to such crimes against civilisation."

The society endorsed the appeal of the London Society of Antiquaries to the Government of the United States asking it to protest to the German Government against the barbarous treatment of ancient and beautiful buildings during the course of the warfare. It seemed fitting that two societies, composed of persons now enemies of our King, should disappear from the list of those with whom the society was associated by means of the exchange of publications.

A new guide book to the Blackgate and its museum was issued by the society during the year. Mr. W. Parker Brewis was the author, and to him the council expressed their thanks. A committee had been appointed to consider the best means of improving the conditions under which the collections at the Castle and Blackgate were displayed. Unfortunately the disturbed state of affairs consequent upon the war made it an unfavourable time for appealing to members or the public for special funds, without which so little could be accomplished. Among donations to the museum during the past year, the council specially thank the president for a case

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containing electrotypes of 208 Roman gold coins found at Corstonitum.

Twenty new members have been elected during the year 1914, leaving a slightly larger number of members than at any previous time.

WAR ITEMS.

THE Board of Trade desire to draw the attention of manufacturers, merchants and shippers to the following regulations governing the export of articles destined for the use of the French Government.

1. Application for permission to export to France goods of which the export is prohibited by Proclamation will receive special consideration if it can be clearly shown that the goods are destined for the use, directly or indirectly, of the French Government. Such applications must be made to the Commission Internationale de Ravitaillement, India House, Kingsway, W.C.

2. Documents issued by provincial military or naval officers, other local authorities, or Government contractors in France, will not be recognised as evidence of the destination of the goods unless formally approved in writing by the competent Department of the French Government.

3. British manufacturers, merchants and shippers are accordingly warned that, before entering into any contracts for the supply of goods stated to be for the use of the French Government, they should first obtain from their clients written evidence that the approval of the Ministry of War, Ministry of Marine, or other Department concerned has been obtained.

4. Application for permission to export the articles in question must then be made in writing to the Commission Internationale de Ravitaillement accompanied by the necessary documentary evidence. The applicants should not proceed with the execution of the order until they have satisfied themselves that a permit to export will be granted.

Any firms accepting contracts without complying with the above regulations will do so at their own risk and with full knowledge that permission to export the goods which they have contracted to supply may be refused.

Applications for permission to export goods which are ordered by firms or individuals in France for purely industrial purposes, and which are not destined for the use of the French Government, will continue to be made in the ordinary manner to the Commissioners of Customs and Excise, Customs House, E.C.

ILLUSTRATIONS.

SHARSTEAD COURT GREAT HALL.

SHARSTED COURT, Doddington, near Sittingbourne, the seat of Alured Faunce de Laune, Esq., J.P., stands in a park of 250 acres. It was owned in the thirteenth century by Sir Simon de Sharsted, but was modernised in the early part of the eighteenth century, when the present front and east wing were added.

Our illustration shows the great hall, which is a portion of an addition to the east wing, recently carried out at a cost of £3,500.

The great hall is 18 feet high, and is oak-panelled to a height of 14 feet 6 inches. The ceiling is of fibrous plaster, taken from an old example at Broughton Castle, and contains ten shields of the Faunce arms and quarterings. A modelled plaster frieze has been introduced above the panelling.

Very old tapestries have been restored and let into the panelling, forming a feature of the room. The stone fireplace is an old one in Kentish rag, which was accidentally dug up in the grounds.

The aim of the whole scheme was to harmoniously blend the new work with the old existing parts, and by carefully studying the details and materials this has been attained.

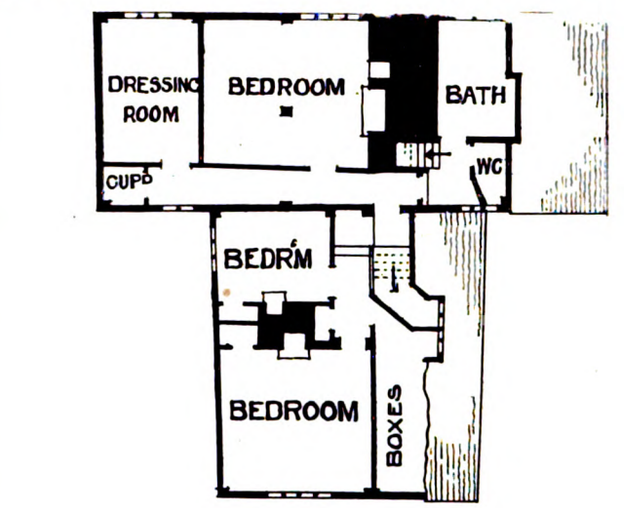
The oak panelling and oak flooring, and plaster work, was carried out by Mr. Rob. Schaub, of 14 John Street, Bedford Row, W.C., and Mr. Marshall Harvey was the architect.

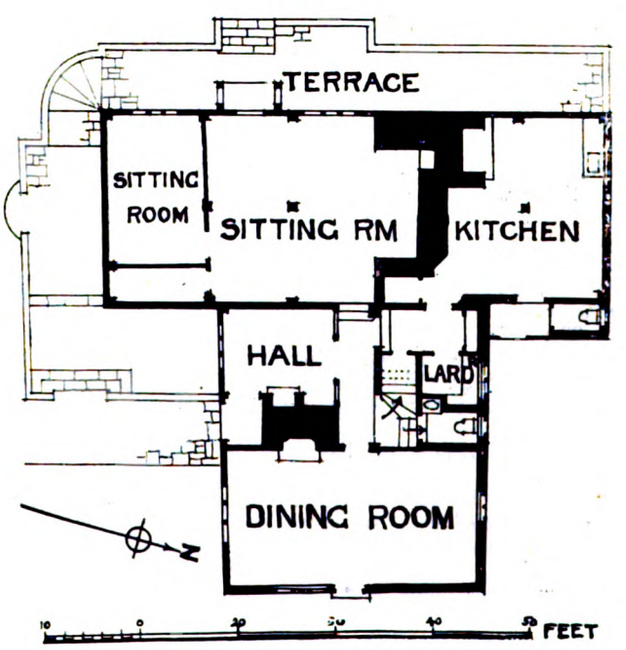
DESIGN FOR HEAD OFFICES OF PORT OF LONDON AUTHORITY.

THE drawing we reproduce was exhibited in the architectural room at the Royal Academy last year, and shows the detail of Mr. Robert Atkinson's competition design for the head offices of the Port of London Authority—an excellent example of our latest version of Neo-Grec.

BINGLES FARM, LYE GREEN, SUSSEX.

THIS old Sussex Homestead, situated on the rising ground towards Crowborough Beacon and dating back to the sixteenth century, and forming a portion of the estate of Earl De La Warr, and now the property of Sir Howard Frank, has lately been undergoing extensive repair and a certain amount of internal alteration to make it suitable for a "week-end residence." The repairs were taken in hand with a view to altering the general appearance of the





original building as little as possible; but it was found necessary to strengthen the timber construction, for which purpose oak was taken from the old barns, &c., which were removed so as to clear the ground adjoining the house on the north-west. This space is now occupied by the gardens, shown in the photographs. The lead lights containing a good deal of the old glass were carefully removed and re-leaded. A new porch was erected opening out on to a terrace which was formed on the north-west front.

Internally the modern plaster ceilings were removed, and the excellent old stop-chamfered main beams and joist were exposed and new ceilings formed between. A small room

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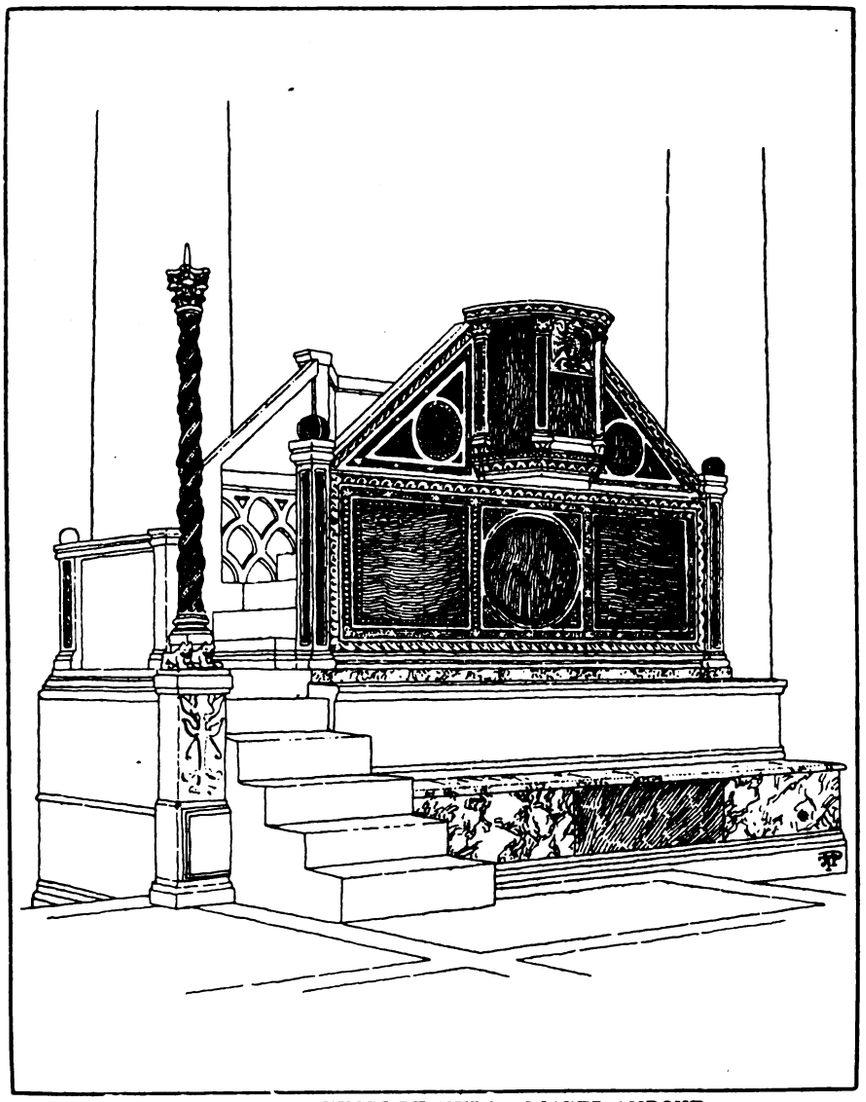


FIG. 5.—S. LORENZO, FUORI LE MURA.—GOSPEL AMBONE.

facing south-east was made into an entrance hall, and new external doorway formed in the depth of the chimney breast and originally a cupboard. The "wattle and daub" inner partition was removed, but the main posts and head were left as an open screen to allow of further light to the passage, and to open out the quaint old staircase. The modern grates were removed and the old openings again formed, the original oak heads being found under the modern plaster.

The old kitchen has been transformed into the large sitting-room, and is interesting owing to the old "roof tree post," which goes right up to the main roof, of which it is an important portion of the structure. This and the ingle fireplace is well shown in one of the photographs.

The old wash-house has been formed into a modern kitchen.

The fine old timbered roof space, reached by the original stair formed of solid oak blocks, has been used for further bedroom accommodation, the space between the timbers being ceiled with plaster. Fortunately, two of the original oak window frames were found built in the gables, and these were carefully opened up, repaired, and releaded, thus avoiding any modern openings being formed.

The building, though small, is distinctly a very good example of the timber-construction work of the period, and considering its age has suffered very little from latter-day "improvements," and these may honestly be said to have now been removed. This work has been carried out according to the designs of Mr. Melville Seth-Ward, F.R.I.B.A.

COMPETITION NEWS.

LONDON.—The winner of the highly important competition for the Board of Trade offices proposed to be erected facing the Embankment and at the rear of the Banqueting Hall, Whitehall, is Mr. E. Vincent Harris, F.R.I.B.A., of 8 New Square, Lincoln's Inn, W.C. In the preliminary stage 187 sets of designs were sent in. The assessors—Sir Aston Webb, R.A., Mr. Reginald Blomfield, R.A., and Mr. Ernest Newton, A.R.A.—selected ten, the authors of which were invited to take part in the second stage, and who each received the sum of £300. Although Mr. Vincent Harris's design has been officially accepted, the work of erection has, we understand, been postponed for the present by the Office of Works. The designs are to be on view from Monday, February 8, to Monday, February 22, from 10 A.M. to 4 P.M., at York House, Kingsway, W.C.

OAKENGATES.—The Salop Education Committee received eight sets of competitive plans for the proposed Technical Institute. The design of Mr. H. H. Brown, F.R.I.B.A., of Manchester, has been selected.

OLDHAM.—At the last meeting of the Education Committee, it was announced that the assessor, Mr. John H. Woodhouse, had made the following awards in connection with the competition for the new infants' school and domestic subjects centre in Ward Street: 1, Mr. F. Thorpe (premium of £15); 2, Mr. T. Hilton (premium of £10); 3, Messrs. Taylor & Simister (premium of £5).

STEPNEY.—At the meeting on Wednesday the Borough Council approved a draft advertisement inviting designs in competition for the proposed municipal buildings in Arbour Square. The suggested accommodation includes a Council chamber, six committee-rooms, mayor's parlour, &c., and offices for the Council's staff. Mr. Henry T. Hare, F.R.I.B.A., has been appointed to act as assessor. Prizes of £100, £75 and £50 will be offered. If a building contract is not entered into within twelve months, the architect whose design is selected will receive £300 on account, and if the building scheme is abandoned or indefinitely postponed a further £300 in full discharge. The draft advertisement says, "A lavish use of ornament is deprecated" and "the Council do not desire the provision of a tower."

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THE DIVISION OF THE AMBONE IN ROME.

By J. TAVENOR PERRY.

(Concluded from last week.)

THE ambones of the basilica of S. Lorenzo-beyond-the Walls are on a much larger scale than those already described, and with the screens of the Schola Cantorum, now destroyed, may be regarded as the perfected idea of a choir in the former half of the thirteenth century. Neither their exact date nor the name of the marble mason who worked upon them is known, but they were probably erected between 1216, when Honorius II. connected the nave in which they now stand with the more ancient basilica beyond it, and 1256, the date of the tomb of Cardinal Fieschi, who was a great benefactor to the Church; and as the Paschal candlestick shows considerable likeness to similar works by the Vassalecti, it has been assumed that these ambones are the work of one of that great family of marble masons and mosaicists.

The Epistle ambone (Fig. 5) is a fine piece of simple marble work, having a marble book-desk to the pulpit turned towards the altar, and none at the other end for the Gradual as in San Clemente, and is without any decoration of coloured marble or mosaic, but it is constructed of the peculiar mottled white marble known as Pavonezza. The Gospel ambone facing it (Fig. 6), also in Pavonezza, has Breccia dorata introduced in some of the mouldings and in the revetting of the bottom bench, while the great panels of the ambone itself are magnificent examples of porphyry. The little carving introduced in the cornices, capitals, and bracketing-out of the pulpit is most refined and delicate, and the mosaic in the ribbon borders consists of minute and brilliant glass tesseræ which distinguish the work of both the Cosimati and the Vassalecti.

A comparison between these and those of Sta. Maria in Cosmedin shows that ambones have already increased in importance, and are on the way to that development which resulted in the lofty structures raised on columns that soon became common throughout Italy. In this case the extra height has been gained by the addition of another bench to the ambone front, for the columnar arrangement never seems to have appeared in Rome itself. It must be mentioned that these ambones of S. Lorenzo have been in part constructed of marbles previously used in ancient buildings, and that the Paschal candlestick, which is carried on the backs of two lions, stands on an ancient inverted cippus.

The two ambones in Sta. Maria in Ara Coeli, now standing in the transepts, appear to have been formed out of an older Gospel ambone which must have stood in the nave, the two pulpits being the north and south faces of it, the remainder being used in the ramps and other parts of the reconstruction. The original ambone must have been the work of the earliest of the Cosimati, and on the portion standing towards the ritual north side (Fig. 7) is the inscription + LAVRENCIVS · CVM · IACOPO · FILIO · SVO · VIVS · OPERIS · MAGISTER · FVIT, so that the work belongs to the end of the twelfth century. Some fine slabs of porphyry have been used in the panels, and the eagle, the distinguishing mark of a Gospel ambone, holds a serpent in its claws. The most noticeable detail of this ambone is found in the spiral columns inlaid with mosaic and carried on carved brackets set at the angles of the pulpit; but though in this particular, and in the quantity of its carving, it displays great richness, it lacks the classic repose of the more beautiful ambone of S. Lorenzo.

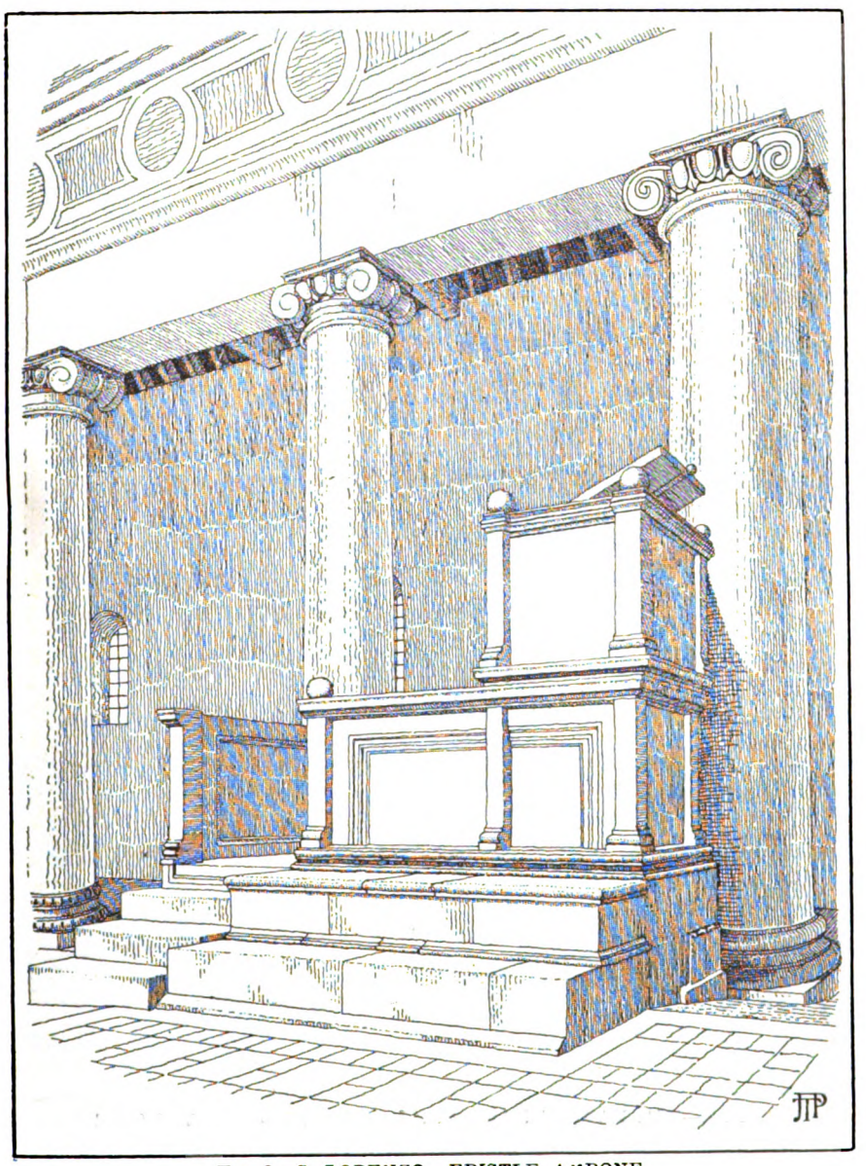


FIG. 6.—S. LORENZO.—EPISTLE AMBONE.

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In S. Cesareo is an ambone made up of portions of an older one which much resembles those of Ara Coeli and has the same twisted marble and mosaic columns, and among its rich carving may be found the heads of sphinxes, the Lamb, and the Evangelistic symbols; and in SS. Nereo ed Achilleo are set up again portions of an ambone from S. Silvestro in Capite.

The last ambones to be erected in Rome were those of S. Pancrazio, and though they have been destroyed, drawings of them have been kept; and in the Lateran Museum is part of an inscription which they bore, running thus: LEGIT ' ATTENDAT 'AD ' QVID ' SACRA ' LECTIO ' TENDAT. They appear to have closely resembled those of Sta. Maria in Cosmedin, and had the bench of the Gospel ambone provided with arm-rests at each end in the form of couchant lions.

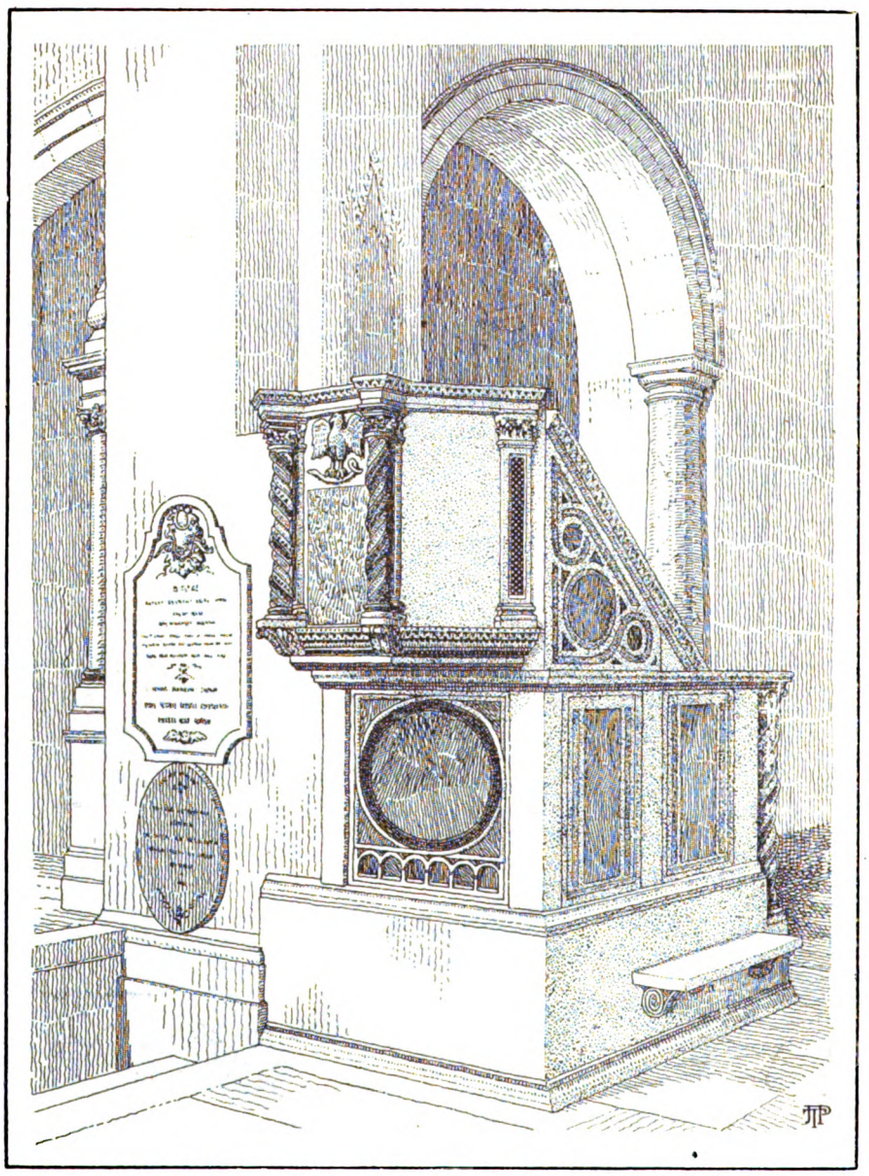


FIG. 7.—STA. MARIA IN ARA CŒLI.—AMBONE ON NORTH SIDE.

In the district round Rome several ambones are to be found, if not now in pairs, yet having been or intended to have been part of such an arrangement as already described. At S. Pietro, Albi (Alba Fucentia), there is a Gospel ambone extremely like that in Sta. Maria in Cosmedin which has preserved the names of its makers in the following inscription: CIVIS ' ROMAN ' DOCTISSIMVS ' ARTE ' IOHS ' CVI ' COLLEGE ' BONNVS ' ANDREAS ' DELVIT ' HONNVS ' HOC ' OPVS ' EXELSVM ' STRVSSERVNT ' MENTI ' PERITI ' NOBILIS ' FT ' PRVDENS ' ODERISIVS ' ABFVIT ' ABAS. At Fondi and Terracina are very beautiful ambones decorated with Cosmatesque mosaics, which appear to be the work of the same artists, but that at Fondi is alone inscribed, and thus: TABVLA ' MARMOREA ' VITREIS ' DISTINCTA ' DOCTORIS ' STVDIO ' SIC ' EST ' ERECTA ' IOANNIS ' ROMANO ' GENITI ' COGNOMINE ' NICOLAO. At Sta. Maria in Castello, Corneto, are two ambones, and that of the Gospel was made in 1208, the year of the consecration of the church, by Johannes, the son of Guttone, and last member of the celebrated mosaicist family of Ranuncius of whom there is any record; and in the sacristy of the Duomo of Tivoli some remains of a Cosmatesque ambone are preserved, but not enough to call for description.

Before leaving these Roman ambones more particular attention must be called to the arrangement of their desks, which was altogether departed from later in other parts of Italy to a degree which would seem to imply some modification in the ritual due to local or other causes. The position of the desk in the Epistle ambone on the side towards the altar never varied in Rome, but is rarely found elsewhere; while the desk for the Gradual, which occurs in S. Clemente, is never repeated in Rome, though it occasionally occurs elsewhere. In the Roman Gospel ambones no fixed desk for the book of the Gospel is ever found; and presumably in the city and its neighbourhood the ancient ceremonial was preserved at the Gospel reading, and the book was held, as aforetime, by a sub-deacon, whilst in other parts of Italy elaborate marble fixed desks were provided at the side of the ambone facing the Schola Cantorum.

There are a great many Paschal candlesticks in the Roman churches, besides the three already mentioned, no longer associated with the ambones to which they once formed important and picturesque adjuncts, and which have been lost. The earliest of the series may have been the ancient and beautiful candelabra, now preserved in the gallery of the Pio-Clementino in the Vatican, which were taken from the Basilica of Sant' Agnese on the Via Nomentina; while those of S. Pancrazio and SS. Nereo ed Achilleo may also be ancient candelabra adapted to their present

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purpose. A fine candlestick of Bianco-e-Nero remains in Sta. Maria Maggiore, which belonged to the ambones destroyed by Domenico Fontana when he built the Cappella Sistina for Sixtus V. because they interfered with the view of his new building. In Sta. Maria in Trastevere is a spiral marble and mosaic candlestick of the thirteenth century, standing now to the ritual south of the altar; in SS. Cosma e Damiano is a similar one 6 ft. 7 in. high which may at one time have accompanied the ambone given

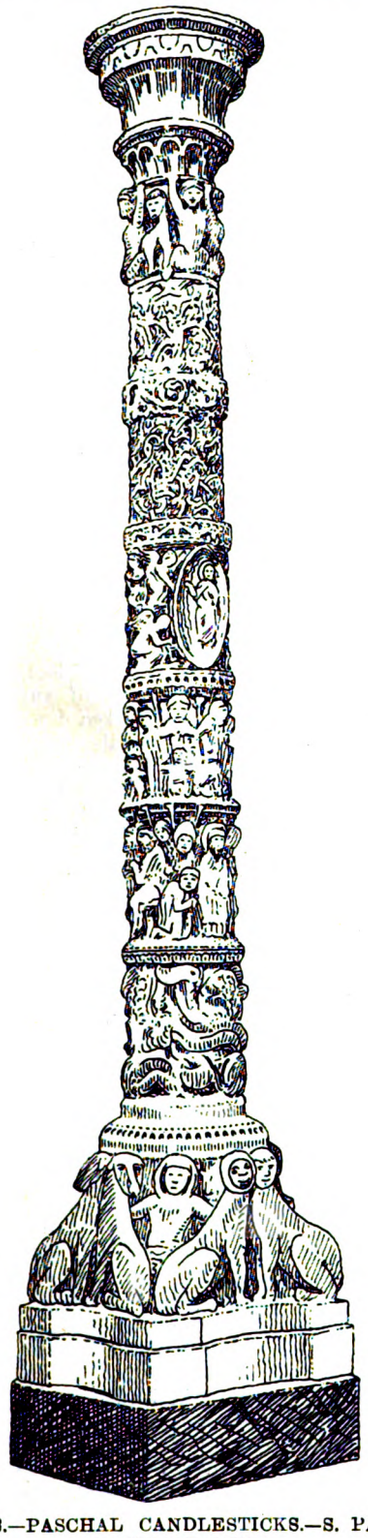


FIG. 8.—PASCHAL CANDLESTICKS.—S. PAOLO FUORI LE MURA.

to the church by Sergius I. about 695; in the cloister of the Lateran are some remains of a candlestick with fragments of the ambones made for the basilica by the same Laurencius and Jacobus who worked on those of Ara Coeli; while in Sta. Cecilia in Trastevere there is a fine spiral marble candlestick belonging to the ambones destroyed by Cardinal Paolo Sfondrato when he restored the church in 1599.

But by far the finest Paschal candlestick remaining in Rome is that in the basilica of S. Paul-beyond-the-Walls (Fig. 8), and though the ambones with which it was associated had been destroyed long before, this beautiful work of art had been spared and it survived the great fire. It is of white marble and stands some 16 ft. 6 in. in height, and is of late twelfth-century work except the sconce, which is a modern restoration. It bears two inscriptions: that on the astragal gives the name of the marble masons by whom it was made: EGO · NICOLAVS · DE · ANGELO · CVM · PETRO · BASSALECTO · HOC · OPVS · COMPLEVI; while on the base is this verse:

ARBOR · POMA · FERT · ARBORE · COLVMINA · GESTO
PORTO · LIBAMINA · NVNCIO · GAVDIA · SED · DIE · FESTO
SVRREXIT · CHRISTVS · NAM · TALIA · NVMERA · PRESTO.

SOME MODERN METHODS OF ARCH CALCULATION.*

THE arch is a form of structure which possesses great advantages from the standpoints of beauty and economy, and from the earliest times the arch has been used in all kinds of constructional work. In the present paper arches are not considered at all from the point of view of architectural styles or orders, but consideration is restricted to the calculation of the stresses in them.

The arch presents points of considerable difficulty from this point of view, and the resulting formulæ are elaborate. Some may contend that the formulæ are too elaborate, and that "simple practical rules" are just as good; the answer to such contention is that such simple rules would be welcomed if they really were as good. The difficulty is that unless simple rules are applicable over a wide range, and have been fully tested by scientific experiment, there is considerable danger in their use.

There is, unfortunately, among some practical engineers a strong antipathy to complicated formulæ—an antipathy which is usually stronger in proportion as the formulæ are not understood—but closer acquaintance with such formulæ, and some useful spadework in the form of the compilation of tables and diagrams, usually helps to dispel much of the dread. The primary reason of the difficulty in the determination of the stresses in arches arises from the fact that in mose cases the arch is what is called "a statically indeterminate structure," so that the forces acting upon the arch cannot be found by the ordinary laws of statics. Exactly similar difficulties arise in the case of stiffened suspension bridges, continuous beams, and slabs.

The stresses in an arch can be found as soon as we can find the magnitude and position of the reactions; these reactions R may be considered as compounded of vertical components V and horizontal thrusts H; if, as is usual, all the loads on the arch are vertical, the horizontal thrust H must be the same at each end.

We can then draw the line of pressure, linear arch, or equilibrium polygon (three alternative names for the same thing) for the given load system upon the arch.

Then by Eddy's theorem that "the bending moment at any point of an arch is equal to the product of the horizontal thrust into the vertical intercept between the centre line of the arch and the line of pressure," we have:

Bending moment at any point ($P = H\delta$).

If the line of pressure comes below the centre line of the arch, the upper surface or extrados of the arch will tend to become in tension; and if the line of pressure is above the centre line of the arch, the lower surface or intrados of the arch tends to become in tension.

Stresses in the arch.—To obtain the stresses in the arch we first find the thrust or normal pressure Q and the shearing force S at the point by resolving the thrust O_1 at the point under consideration along and perpendicular to the centre line of the arch at the given point.

Then if A is the area of the section and M_c, M_t the compression and tension moduli, we have:

$$\text{Maximum tension stress} = t = \frac{H\delta}{M_t} - \frac{Q}{A} \quad . \quad (1)$$

$$\text{Maximum compression stress} = c = \frac{H\delta}{M_c} - \frac{Q}{A} \quad . \quad (2)$$

$$\text{Mean shear stress} = s = \frac{S}{A} \quad . \quad (3)$$

There is, therefore, no difficulty whatever in the calculation of stresses in arches when once we know the horizontal thrust.

* Abstract of a Paper by Ewart S. Andrews, B.Sc., M.C.I., read at a meeting of the Concrete Institute.

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Cases in which the horizontal thrust can be found without the elastic theory of arches. These are as follows:

1. Parabolic arch uniformly loaded over whole span:

$$H = \frac{w l^2}{8 v}$$

w = load per unit length,
l = span of arch,
v = rise of arch.

2. Parabolic arch with uniform load extending from an abutment to the centre—

$$H = \frac{3 w l^2}{16 v}$$

3. Arch of any shape provided with hinges. In this case the line of pressure can be drawn by the well-known graphical construction for making a link-polygon pass through any three given points; then the polar distance of the vector diagram gives the horizontal thrust desired.

This theory, to which the author's principal attention was given, is based upon a consideration of the deformations which an arch-rib obeying the ordinary laws of bending will receive. From these deformations we are able to calculate the horizontal thrusts.

Let δs represent a very short length between two points of an arch-rib, one end of which is considered as fixed relatively to the other end, and suppose that the bending moment along this very short length is B.

If E is the elastic (Young's modulus) and I the moment of inertia of the rib; it can be shown by the theory of beams that:

$\Delta\eta$ = vertical displacement of the end due to bending

$$= \sum_A^D \frac{B x \delta s}{E I} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

Δx = horizontal displacement of the end due to bending

$$= \sum_A^D \frac{B y \delta s}{E I} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

$\Delta\theta$ = angular change of tangent to rib at end

$$= \sum_A^D \frac{B \delta s}{E I} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

These are the general formulæ upon which all the special formulæ are based, and it should be noted in passing that they are the deformations due to bending only, and do not include those due to direct thrust; we will refer to the effect of the latter at a later stage.

These general formulæ were then applied to the most common special cases of rigid arches, viz.:

(1) Arches with two hinges or pin joints, *i.e.* two-pinned arches.

(2) Arches without hinges, *i.e.* fixed arches.

In a paper of this kind it was manifestly impossible to deal fully with a subject upon which several long text-books have been written, and it might very well be that many important points have been omitted. The author hoped, however, that a study of the paper would enable those who had not had the opportunity of a complete study of the arch theory in its more general aspects, to follow the fundamental relations upon which scientific calculations were based, and that their interest would be sufficiently aroused to encourage them to study the subject more fully.

MUNICIPAL ENGINEERING—PROSPECT AND RETROSPECT.*

By MR. NORMAN SCORGIE, M.I.C.E.

IT has become almost a customary rule in this Society that the President, on taking office, should attempt something in the nature of a general survey of the branch of engineering with which he is connected—its progress and its prospects. Of course the Society had often been fortunate in having Presidents able to handle broad issues in an illuminating form, but in his own case he was very conscious that a busy municipal practice in crowded North East London is not the ideal atmosphere in which one would prepare a presidential address of abstract contemplation.

In our time every branch of engineering has become noticeably more intensive, more complex, but municipal engineering has been peculiarly influenced by all the problems that arise from the endless efforts of man to conform to a social environment which is constantly changing, and, of late, changing so rapidly that it seems to have been revolutionised within the past five and thirty years.

In these changes municipal engineering has received less relief from specialisation than other branches. Admittedly the larger undertakings, mostly classed as municipal trading, are placed in special hands. The borough engineer is no longer called upon to design a town hall in his spare moments, or to manage a tramway system as a hobby; but this is a limitation on the amount of his work, and not on its range. He must still be architect enough to add to the town hall or adapt an old one to new uses; he may still have to install the tramway system, and will certainly be called on for inspiration in any difficulties; he may not have to manufacture gas or electricity, but he has to possess a knowledge of their manufacture; he must be something of a bacteriologist to deal with sewage; and more than a little of a lawyer in order to pick holes in the opinions of eminent counsel in matters of public-health law.

The real reason for the difference in this connection between municipal and other engineering seems to me to depend on the nature of the work itself, and the conditions of local government in this country.

Local government by small areas makes elaborate specialisation impossible in municipal engineering. The Town Council cannot specialise in house refuse, and refuse to scavenge or light the streets, and on the other hand it cannot afford, since its area is small, to pay adequate salaries to a number of separate experts. Therefore the municipal engineer is bound to be something of a Jack-of-all-trades. He must know something of everything and everything of something, be an opportunist, doing his best with the material ready to his hand, hampered on every side by limitations and vested interests. His plant is largely classed as unproductive. His results are increased public convenience and reduced death rate.

Public expenditure, both national and local, is constantly increasing, and one can see no sign of any check. Old-fashioned ideas of economy have broken down. The public is in revolt against the belief that the spending of money is always an evil to be avoided if possible. There is grave danger that for want of guidance they may incline—indeed they have inclined—to the opposite fallacy that all spending of money as long as it is on public objects is a good thing to be encouraged as much as possible.

The misleading division of municipal expenditure into productive and unproductive is one which the municipal engineer should combat, and in its place he should strive to set up an enlightened public opinion as to the real aims and productiveness of his work. It is public ignorance of the difference in the material results to be expected from it and other forms of engineering which condemns him on the one hand to the use of obsolete devices in the interests of so-called economy, and on the other hand to embark on unsound schemes for the sake of an immediate profit or saving.

In recent years it has probably been of some advantage to the profession as a whole that one branch of it should have remained exempt from the increase of specialisation, because specialisation always produces a temporary decline in status. We are apt to value a thing by the price it will fetch, and a man by the salary or fees he can command, and if the work of an engineering post, formerly held by one man, is split up among several, it is clear that the individual salaries will be smaller and the status of the holders to some extent less than that of their predecessor. It is only a temporary depression for two reasons: first, if the change is a good one it will lead to such an increase of business that the separate appointments will eventually be worth more than the original one; secondly, and more important, in the case of those firms and public authorities whose work is largely concerned with engineering the importance of engineering knowledge in high places is becoming more and more recognised, so that while the purely professional work of a chief engineer may be abolished by the division of it among independent departmental engineers, yet the appointment of an engineer as chief executive officer is becoming usual.

The status of engineering is not permanently at the mercy of anything except the merit of the engineer. One simple safeguard we should have, such as every profession has found necessary for its protection against charlatans—namely, that no one who is not properly qualified should be allowed to call himself an engineer. Beyond that I think

* Abstracts from the Inaugural Address of the President of the Society of Engineers (Incorporated), Mr. Norman Scorgie, M.I.C.E., delivered on February 1.

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we could work out our own salvation without the aid of many shibboleths. It may be argued that those professions which by common consent enjoy the highest prestige, such as medicine and law, are protected by elaborate codes of etiquette and internal discipline; but it should be remembered that those codes are late products in professional history. Whatever we may think of their value, they are the devices of a professional class to preserve a position which it has already won on its merits and without their assistance.

There are some grounds for suggesting that the exceptional breadth of municipal engineering may pass away and give place to specialisation to some extent. The co-operation of local authorities for particular purposes has often been encouraged by Parliament. There are (excluding the main-drainage system of London) forty-two joint sewerage boards acting for about 110 local authorities, including such important towns as Birmingham and Brighton.

In Greater London there are about forty men holding chief appointments as municipal engineers, in no way distinguished from one another or from those drawing similar salaries in other parts of the country. Yet their collective cost is greater than would seem necessary for London compared with provincial towns on a basis of population, size, rateable value, or even traffic. It is obvious that forty men of similar ability, paid similar salaries, but each a specialist in one class of work and in charge of that work over the whole of London would be very much more efficient in themselves at no increase of cost to the public. Specialised efficiency is not popular at the moment, because of its supposed identification with German methods; and to say that they would be more efficient in themselves does not prove their ultimate value under popular control. London suffers from an extraordinary lack of any sense of corporate unity, and, in the absence of that cementing force, it is most probable that local areas under the control of local Councils, areas small enough to be conscious of physical unity in default of anything better, are the best form of government.

Historically the development of London government might have been very different. The creation of a directly elected County Council has unfortunately only produced twenty-eight examples of the jealousies that commonly exist between any County Council and the non-county boroughs within the county. Moreover, it is an inexpansive system. Independent authorities outside a federal scheme will often in self-interest elect to come in, but it is impossible to imagine that the boroughs outside the County of London will ever of their own free will come under the control of an external London County Council. Their opposition may postpone the whole question ten or even twenty years, but sooner or later London government will have to be dealt with again, and most probably the next time on federal lines. Federation itself, of course, would not necessarily produce a great amount of specialisation in municipal engineering, but since it almost always leads to closer union it would probably be a step in that direction.

Municipal federation is also becoming a possibility in other parts of England; for example, in the Birmingham district and in the Manchester district—indeed, in the latter it is almost an issue of current municipal politics.

But before these tentative influences arising from unity of local interests can affect this branch of the profession, it is likely that another influence, new within the last decade, and arising from a unity of interest all over the country, may have a profound effect upon the problem of the road. This includes not only the question of road construction and maintenance, but the whole problem of transport, from town planning to traffic regulation.

For one reason or another road maintenance in this country is a duty which is very unevenly performed, and a burden which is very unevenly distributed under present conditions. The Departmental Committee on Highways (1903) found the roads of England and Wales in the hands of some 1,900 local authorities pursuing widely divergent policies. The recommendations of the Committee, which would have introduced a modified nationalisation by government grants administered through county road boards for the whole of a geographical county (including county boroughs within it), have remained a dead letter through the apathy of the Local Government Board. But with the growing importance of the roads, and their increasing cost, which is now about £15,000,000 a year and greater than that of any other country, it is inconceivable that any control can long be suffered to remain in the hands, for example, of rural district councils who, in some cases, appoint as their surveyors unqualified persons at salaries as low as £40 a year.

The Royal Commission on London Traffic recommended a central traffic board for the whole of the London area, and a reform is none the less a reform because it is overdue.

The creation of the Road Board in 1910 is another conspicuous advance in the policy of centralisation, although for the present limited to financial assistance and advisory propaganda.

Finally, the Government is committed to a policy of fostering co-ordination in regard to town-planning schemes, and from fostering to compelling is a short step in twentieth-century political opinion.

All these are reasons for thinking that a very profound change in the position of the municipal engineer may be near at hand. He began as a surveyor of highways, he may likely end as such. If the roads are taken from him the greater part of his daily engineering work will go with them. It is not really a question of taking some roads and leaving others. In urban areas the distinction between the county and non-county road has generally been rather a matter of financial juggling than substantial fact, and what substance there was has vanished with the coming of the motor.

In rural areas the distinction between the county main roads and the district roads is not perhaps so obsolete, but it is in process of decay.

The direct influence of the war on all forms of engineering will be very great, and some of it is already apparent—for example, the vital importance of standardisation in all material likely to be needed for military purposes. But much greater than the direct effect is going to be the indirect effect on our national temperament. It is one of the ironies of the situation that a war against German militarism is educating us to the importance of the military aspect; that in revolt against soulless German ideals of efficiency we are really developing our own ideal of national efficiency, of local and individual sacrifice to the common good, alien to the English character hitherto, which has placed the liberty of the subject higher than the general interest. It is due to this trait in the English character and to our freedom from foreign invasion that England is pre-eminently the country of local government. We have taken an institution to our hearts and endured any amount of incompetence, of corruption even, as long as it was local. In the future possibly the accent may be shifted and we shall insist on good government as the first condition of survival.

The highway system also has its history in cycles. The Roman roads must have been under the State, but mediæval England reverted to local control. Then the coming of the turnpike and the influence of Telford and Macadam seemed on the point of making them national again, when the rise of the railway put an end to it all and revived the despised parish system. To-day we seem once more on the eve of nationalisation; but if some extraordinary improvement in the safety and convenience of the aeroplane should suddenly relegate the Road Board and motor-cars into the obsolete, it would be no more striking and unexpected than when the locomotive bankrupted the turnpike trusts and abolished the stage coach.

The early history of the road is obscure. A "highway" meant in mediæval days a right of passage and not a special surface. The obligation to maintain the way unimpeded was probably on the adjacent landowners, but any improvements in construction were due not to the law, but to the benevolence of pious founders or religious houses. A considerable decline in the amount of travelling seems to have coincided with the decay of manorial rights and monastic wealth, so that the roads fell on evil days; until an Act was passed in 1555 which for the first time put a statutory liability on the parish as a whole, and for 300 years that policy remained the basis of road maintenance. In that Act originates the Surveyor of Highways, chosen by the parish to serve gratuitously for a year. Highway rates were sometimes attempted from the seventeenth century onwards—Hackney had a 6*d*. rate in 1699—but until the end the compulsory labour and teams which the surveyor was authorised to requisition remained the main resource of parochial road administration.

The toll system, which originated in three toll gates being authorised on a portion of the North Road in 1663 to provide a fund for its repair, came to the rescue of English roads. The parish and the county justices were both pased over, and Parliament established thousands of Turnpike Trusts from about 1706 onwards, which, although

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expressed to be temporary, all became permanent local authorities.

With the beginning of the nineteenth century the Government and public opinion began to take the road question seriously.

The urban sanitary authority had come in with the Public Health Act of 1848—the real starting point of modern municipal engineering—which had made the Local Board of Health (as it was then called) the highway authority for all roads in its district; and by this time there were about 1,000 of them (including municipal boroughs). Elsewhere the rural parishes were being largely superseded by the Highway Boards.

The Royal Commission on Sanitation (1869) recommended the division of all England into sanitary areas, and accepted the poor-law union of the county or the parish as the rural area. This was adopted in the great Public Health Act of 1875, and the Highway Act of 1878 provided that new highway districts should coincide with the rural sanitary districts; but (apart from old ones which did not) there were in 1891 still 6,501 parishes separately administering their own highways, so that the Local Government Act, 1894, which abolished both highway districts and highway parishes in favour of rural sanitary districts, had a great work to do. On account of difficulties in adjusting areas, the Act provided for postponement where necessary, and it was not until 1899 that the last surviving district and parish were each merged.

The reason for the small part the municipal borough has played in the earlier history of municipal engineering is bound up in our forefathers' conception of what a borough was, and their distinctly dirty manner of living. Just as a highway was not a piece of land but a right of way, so a borough to the mediæval mind meant not so much the place as the privilege; chiefly the privilege of exemption from the jurisdiction of the lord of the manor or the sheriff of the county. It was itself a bundle of jurisdictions often over different and very indefinite areas, and one of its most important privileges—the franchise—was personal and had no territorial limit.

Although in the fifteenth and sixteenth centuries the best of the corporations were faithfully fulfilling their corporate obligations in such things as provision of work for the unemployed, yet it is not to be expected, in spite of some rather well-sounding officials we meet with in the records—Street Keepers, Street Wardens, Sweepers of Streets, and (best of all) in Rochester "Scavenger to gather the money" with humbler subordinates to look after the dirt—in a time when highways were of small account, that corporations should be much concerned to improve them. For the rest, our ancestors were not morbidly anxious about drains, and it was not until after the lesson of the cholera epidemic of 1847 that the general public-health laws began.

Yet populous and enlightened towns must have wanted to cleanse and light, to drain and improve their streets long before 1848. They did, and from about 1750 onwards there is a continuous stream of special Acts of Parliament to enable particular towns to cope with their needs.

In a few cases the powers were conferred on the Corporation, or at any rate on commissioners controlled by the Corporation. Liverpool is a striking example of a Corporation having a very broad idea of its proper sphere of action in pre-reform days. It was continually securing local Acts, and was the first provincial Corporation to get one for lighting, cleansing, and watching its streets. It constructed "the first docks ever built in England," and by 1825 it had spent two millions sterling on them. It spent also large sums on street widenings, free schools, and public baths, and it even built and endowed churches. Most extraordinary of all (although outside our subject), it maintained a London office, and it lent money to its citizens.

In most cases, however, the new powers were being granted at a time when the common councils were declining in prestige, and Parliament preferred to confer them on new statutory bodies. These *ad hoc* authorities—Commissioners of Sewers, Paving, Streets, Police, for example—with their varying constitutions and powers, but all of them doing work which the Corporation ought to have been doing, are the principal feature of municipal history in the hundred years before the reform of the Corporations.

The records which most Corporations possess from a very early date (and which some public-spirited ones are editing) are not only interesting, but often important in modern practice. Since the municipal Corporations were reformed the Commissions have been dissolved and their powers transferred to the Town Council, but the majority of the local Acts, whether obtained by the old Corporations or by Commissioners, are still in force. They are further examples of the legal complexity which attends the work of a municipal engineer. To all the modern tastes and abilities which are the qualifications for an ideal borough engineer, it looks as though we should add one other to complete his halo—he must be something of an antiquarian.

LEEDS AND WEST YORKSHIRE ARCHITECTURAL SOCIETY.

A GENERAL meeting of the above Society was held at the Leeds Institute, Cookridge Street, on Thursday evening, January 28. The President (Mr. G. Frederick Bowman) occupied the chair, and Mr. Thos. W. Thornton (President of the Leeds Photographic Society) gave a lantern lecture on "The Story of Fountains Abbey."

The lecturer traced the history of the Abbey from the beginning of its building in the year 1132, and told of the hardships which beset the Cistercian monks in the task of completing such a large undertaking. They found labour difficult to obtain and building material scarce, the stone being finally obtained from Pateley Bridge. These monks, possessed as they were with a fine spirit of determination, toiled through the years for "the Greater Glory of God" towards the completion of these "poems in stone," which are now the admiration of the civilised world.

Mr. Thornton gave a good description of the life of a monk, and explained that although the monk always lived very well, he was in no way a gourmand.

The lecture, being free from technicality, was highly appreciated by the members present, and a vote of thanks was proposed by the Vice-President, Mr. F. F. Walsh, F.S.I., seconded by Mr. A. Willetts and heartily adopted.

ART IN LONDON.

MODERN MASTERS OF ETCHING.

THE Leicester Galleries are, at this time of writing, the home of an interesting collection of etchings and drypoints, the work of modern masters; and there is much that is worthy of close inspection and the highest appreciation. Second to none is the output of Sir F. Seymour Haden, whose "Sunset on Thames," "The Towing-path," and "Sunset in Ireland" are admirable productions, the first-named breathing an atmosphere of poetry; "Greenwich," by the same artist, is of a lower order, with an untidy, unrealistic sky. Mr. Muirhead Bone's "Rainy Night, Rome," and "Walberswick Ferry" are arresting in the perfection of their treatment, the atmospheric effects being most sympathetically rendered. Mr. Martin Hardie's "Place des Cordeliers, Falaise," is picturesque, with an entire lack of any meretricious quality.

It is a pity when artists waste their labour upon unworthy subjects, for it is with landscapes, as with people, that there are records and histories which do not call for perpetuation; "Tall Houses at Mentone" is a case in point, where Mr. Warlow has rendered with fidelity what he saw before him. Whistler could also fritter his energies upon poor subjects, but as he knew how to imbue his work with a poetry which emanated from his inner consciousness, one is often carried away from better judgment in sheer delight. "The Mill," by this artist, is a compelling sketch, and "San Biagio" is a delightful study, light but yet forceful; "Drury Lane" is one of Mr. Whistler's lightning sketches, touched in with his own pleasant *légèreté*, but his "Limehouse" is not at all typical. M. Anders Zorn's hatching is much too coarse and insistent in "The Precipice" and "Cercles d'Eau"; in the latter the reflection of the nude figure in the water is egregiously exaggerated. We see better work by this artist in the portrait study "Frida."

Samuel Palmer's "The Early Ploughman" is every effective in its virility and contrasts, and Millet's "Man with Wheelbarrow" calls for notice. Here, however, we observe an insufficiency of atmospheric light beyond the opening in the wall, causing the appearance of the barrow being driven against a shallow recess instead of finding a clear passage. Two works possess plastic effects to which attention should be directed—namely, M. Jules Jacquemart's "Le Christ à la Colonne" and Mr. E. Blampied's "Restless Horse," each in its way a gem, though we must confess that the horse's tail, while doubtless helping to convey the idea of restless-

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ness, is probably exaggerated in its wildness. "Backing the Hay-cart," by the same artist, is also full of action, and is excellent in its technique. Mention must be made of Mr. Francis Dodd's "Church of St. George the Martyr," a fine drawing with the values well defined; the same artist shows good technique in "On the Lawn," but the composition is poor.

Mr. Malcolm Osborne's "Bannockburn and Stirling Castle" is notable for its breadth and atmosphere; and for their manifold good qualities attention must be directed to M. Béjot's "Le Pont des Arts, Paris," and Mr. Axel Haig's "Amiens," but the latter is deficient in the desirable quality of mystery; Mr. Albany Howarth's "Porte St. Pierre, Auxerre," is just how an architectural tit-bit should be portrayed.

The last two works for which we can find space for notice (though there is much else worthy of inspection) are Mr. Hugh Blaker's "Patrick" and M. Edgar Chahine's "Louise France," both excellently modelled and giving the effect of faithful portraiture.

PORTRAIT PAINTING.*

THE TECHNIQUE OF THE GREAT MASTERS.

By THE HON. JOHN COLLIER.

IT is very difficult to learn anything about the technique of the Great Masters of portrait painting. One has plenty of anecdotes about their habits and manners (which were often somewhat unsatisfactory), but hardly anyone condescends to tell us how they painted.

It is possible, however, to pick up a hint here and there, and something may be learned by a mere inspection of their works. At any rate, in the course of my studies I have come across some interesting details, and I have formed certain opinions, which I propose to put forward for what they are worth.

We will not go back to the ancients. No doubt excellent portraits were painted in classical times, but we do not know enough about them to discuss them with any profit.

I will also pass over the Middle Ages, and come at once to the Great Masters of the Renaissance. Of these one of the greatest is Holbein, who in manner is still somewhat mediæval, although in date he belongs to the early Renaissance. His portraiture is apt to be a little stiff and somewhat lacking in charm, but, having made these reservations, we can give it our profound admiration. His drawing and modelling are extraordinarily subtle, and his grasp of character prodigious. He seems to give one more insight into his sitter than almost any other portrait painter—even the greatest. As for his method, there is, unfortunately, no documentary evidence; we must find it out for ourselves. He made a very careful preliminary drawing on paper, which was transferred by tracing to the canvas or panel, generally the latter. He did not depart from this drawing in any essential, although he often slightly improved on it. Many of these drawings have come down to us—they are of extraordinary delicacy and accuracy. Having made this tracing, he surrounded all the important contours with a very thin dark line of paint. The subsequent work never entirely obliterated this thin line. It can only be seen by minute inspection, but it is to be found in all his pictures. He probably began with a light underpainting in monochrome, as was the practice of the Van Eycks, but of this we cannot be certain. The paint was always thin and smooth, and highly finished. All the details, whether of dress or background, are rendered with the utmost care. Any pattern is given in its completeness; he never adopts the practice of later painters of indicating pattern where the light catches it, and losing it in the shadows. It is always there, although so delicately rendered that it seems lost in places. There is no focussing; the head is not thrown into artificial relief by blurring or suppressing the accessories, and yet everything takes its place. The head is so lifelike that it is never overpowered by the surrounding detail. As you fix your eye on any part of the picture you can see it sharply defined (as you do in Nature), but you are never worried by this, as there is no over-emphasis. You are not forced to look at comparatively unimportant details, but you can do so if you like, and find them true to life.

One consequence of this is that the picture looks right from almost any distance. It can be peered into quite closely or viewed as a whole from some way off. In neither case does it suffer.

I rather dwell on this, as it is a characteristic of all early work. It was only the later painters who invented a sort of shorthand so that the picture can only be properly seen at a certain distance. When looked at nearer than this distance it seems merely a mass of blurs and smears. This has a charm of its own, for it looks, and is, so masterly. The effect seems to be produced by such strange and inadequate means. But to me there is great pleasure in being able to look closely into a picture and to enjoy the delicacy and precision of its detail.

The freer and more summary method is to be seen at its best in the later works of Velasquez and of Rembrandt. These have to be looked at from a considerable, but never from an excessive, distance. In the case of large works, such as "Las Meninas," it is about the distance at which one would naturally stand in order to take in the whole picture at a glance. Many modern artists go much further than this. Even works of a moderate size have to be looked at from the end of a large gallery to seem at all coherent, and even then—but I will not pursue this somewhat painful subject.

To return to the earlier masters, it is only when we get to Titian that we find any variety of texture and any play of brush work, and even with him it is not very marked. Titian's portraits are very elaborate, but there is a certain suppression of detail and a greater breadth of effect than is found in any earlier work. Titian's pictures seem to have been built up by a very slow process, and his portraits are probably no exception to this rule.

Here is an account of his method. It has come down to us through Boschini, who knew the younger Palma, whose father had received instruction from Titian himself. The pictures were first laid in very solidly with only four colours, a red earth (possibly Venetian red), with white, black, and yellow (the yellow was probably yellow ochre). There was no blue; but black and white make a bluish grey, which would be sufficient to indicate this colour in the first painting.

Boschini speaks of four pencillings which were done in this way, and then the picture was put aside for several months. When he took it up again he first amended and corrected all the forms. He then finished very laboriously with continual glazings, and also with rubbings of opaque colour frequently applied with the finger instead of with the brush. "In this way he gradually gave to his works that bloom and perfection of rich surface and that fulness of colour in which his paintings surpass all others," as Boschini justly observes. The essential point about this method is that it is so indirect. The painting was first executed in very dull colours, and the full effect was only arrived at by a protracted series of glazings and scumblings. In one form or another this indirect method was a very favourite one with the older masters, and indeed with many later ones. Sir Joshua Reynolds followed fairly closely on Titian's method, except that he speeded it up a good deal, and his first paintings were with a still more restricted palette; and up to quite modern times some kind of underpainting approaching to a monochrome has been very generally adopted. But of late this indirect method of painting has been entirely abandoned. I do not know any modern painter who practises it.

It seems rather absurd to criticise adversely a method which, in Titian's hands, has given us some of the finest paintings which the world has ever seen; but I certainly think that for portraiture a more direct technique is preferable, and, indeed, this preliminary underpainting was by no means universal even with the old masters. I do not believe that either Velasquez or Rembrandt made any approach to a monochrome preparation.

We have seen that Titian was the first great painter to make much use of texture and of varying surface in his painting. Before his time the surface was uniformly smooth. It is quite possible to suggest a rough texture on a smooth surface, as we can see any day in photography: even a smooth shiny photograph can perfectly represent a wrinkled skin or a rough-cast wall, and what a photograph can do a picture can do, but it involves a great deal of labour. In skilful hands a certain roughness of paint can represent a rough surface as truly as, and much more expeditiously than, the minute alternations of light and shade which convey the appearance of texture in a photograph or

* A lecture delivered on January 27 before the Royal Society of Arts.

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in a smooth painting. That all varieties of surface can be represented by appropriate brush work was most fully realised in the later work of Rembrandt. Since then many artists have essayed it, but none with his mastery. Velasquez had also a great power of brush work, but in this he did not equal Rembrandt, though in many other qualities of portraiture I think he surpassed him. I hold that Velasquez and Rembrandt carried the art of portraiture—at least, male portraiture—to the highest level it has ever attained. They were both so indifferent to female beauty that their portraits of women, however masterly, are quite lacking in that essential charm which is given so wonderfully by the great English school of the eighteenth century.

I have tried hard to discover any authentic testimony as to the methods of Velasquez; but, as usual, we have to rely more on inspection of his works than on any contemporary records.

Señor de Beruete, a distinguished Spanish painter, who made a lifelong study of Velasquez and has written an admirable book upon him, is the best authority I know on the technical side. According to him, Velasquez painted on a red priming in his early work; this gradually changed to a neutral grey in his later style. The impasto of this priming becomes less and less—towards the end it only just covers the canvas, the grain of which is moderately fine even in big pictures. In the "Bacchus" the priming was reddish. There are places, especially round the figures and accessories, where this priming has never been covered; so, instead of working his figures into the background, each part was painted separately, carefully following the drawing. In his later period he became presbyopic, so, not being able to see close, he had to get further and further away from his canvas, which made his execution more summary. In his latest pictures he used very fluid colours, in some places only floated on, as in water-colours, and there is no impasto save in the head and hands. So far I have followed Señor de Beruete, but I disagree with this dictum. Velasquez used impasto freely enough in the draperies, even in his latest style. I also disagree as to the brushes used by Velasquez. De Beruete says that he always used round brushes, and that there is nothing in his pictures to indicate that he ever used flat ones. I am quite convinced that there are many broad sweeping passages in the master's work that can only be rendered by broad flat brushes. It is interesting to note that Palomino, who wrote only sixty-four years after the death of Velasquez, states that he painted the portrait of Admiral Pulido y Pareja with exceptionally long brushes, in order to get more vigour and relief; De Beruete entirely rejects this testimony—I think on insufficient grounds. He also denies the authenticity of the portrait of the admiral in our National Gallery, and ascribes it to Mazo. Here, again, I entirely disagree with him. It is a magnificent portrait, well worthy of Velasquez, and very much above the high-water mark of Mazo. With regard to the long brushes, it is true that they must have been abandoned by the time he painted "Las Meninas," a much later work. This picture is an invaluable document as to the practice of Velasquez. He is standing up to his easel with quite a small round palette in his hand, and the brushes are round and of very moderate dimensions; but then he is probably supposed to be just putting the finishing touches to his picture. It is absurd to imagine that he would paint the broader passages of such an enormous canvas with such little brushes. The colours on the palette are given by De Beruete as vermilion, white, terre de Seville, and carmine; and there are indications of three or four sombre tones, which may be blacks or browns. There seems no trace of the blue and yellow that he must have often used.

The room is a big one, very lofty, and lighted from the side by high narrow windows. As he was painting the little princess and the maids of honour, it has been supposed that this was not his usual studio, but merely a room in the palace used for the occasion. I think myself it was very likely his ordinary painting room; it seems well adapted for the purpose, and there are many pictures on the walls such as artists accumulate in their studios. In any case, this is the room in which he painted what was perhaps his masterpiece. At the risk of wandering a little from my immediate subject, I may mention that one of the great qualities of this picture is that for the first time in art an effort has been made—and an extraordinarily successful one—to give absolute truth of light and shade; and more than that, to give the effect of atmosphere that pervades all natural scenes. For the first time in art a room has been made to look like a real room, with the figures in it bathed in a real atmosphere and lit up with the light and shade of Nature.

This is a very extraordinary achievement. Some of the Dutch painters, such as De Hoog and Vermeer, have given much the same impression of truth to Nature in the relation of figures to their background; but it is a very rare quality in painting, and no one has done it quite so well as Velasquez. It is occasionally essayed in modern times, but rarely with complete success. The best example that I know is "A Venetian Interior," by Sargent. This is a very wonderful work, but by the side of "Las Meninas" it is a little lacking in simplicity. There is too much virtuosity in the touch, and altogether it is a little too brilliantly dexterous. In looking at it one's first thought is, How amazingly clever! One does not say that in front of "Las Meninas."

To return to the actual method of painting employed by Velasquez. In his early period the execution was precise and very hard. He was fond of dark shadows and clear-cut outlines. In the middle period the paint was put on very solidly and simply, but with much greater freedom; the execution could not be called hard, but was definite and precise. In the third period it was freer still; rather vaguer and softer, and much more subtle. In this later period the paint was put on quite thinly in the shadows, so that the texture of the canvas can be seen through—in places it looks hardly more than a slight modification of the thin grey priming. But however thin the shadows were, they were not painted with transparent colour. It was opaque colour, but very thin and liquid. The lights, especially in the flesh, were solid. The whole seems floated on to the canvas very delicately and subtly, but with an extraordinary economy of labour. At the end certain accents, such as the dark of the eyes or the shadow of the nostrils, were put on with the scratchy touches of a small brush, and the painting was finished—at least, so it looks at the proper distance. Seen near it is just a few soft smears and a dark scratch or two. But then these smears are so wonderfully true in tone and in form. When one has achieved a mastery such as that painting seems surprisingly easy.

Velasquez was not afraid of making alterations when necessary; but one of the characteristics of his work seems the sureness of his intention. His pictures are conceived, as a whole, from the very beginning, and yet he made no studies or preliminary sketches—at least, practically none have come down to us. Through all the three periods his colouring remains simple and subdued, but extraordinarily harmonious. It is mostly in the key of grey.

I think this is all that can be said with any safety as to the methods of Velasquez. The case of Rembrandt is still more difficult. He seems to have worked in a studio with a very small window, so as to get the powerful effects of shadow in which he delighted. His chiaroscuro is far more artificial than that of Velasquez. It is extraordinarily skilful, but to me it is too arbitrary to be quite satisfactory. Again, the warmth of his colouring is unnatural, although very pleasing. He was a great colourist, but somewhat lacking in variety. He affects almost exclusively the browns, reds, and yellows, but within this limited range his mastery is supreme. The extraordinary success of Rembrandt in the key of brown has led many artists to imitate him in their colour-schemes, but mostly with disastrous results. For most painters the greys of Velasquez are much safer, besides having the advantage of being truer to Nature.

The early work of Rembrandt is careful and precise, but it is not hard like that of Velasquez. The execution is smooth, and there is no attempt to render texture by brush work. The best example of this early period is the celebrated "Lesson of Anatomy," at the Hague, painted when he was twenty-six—an extraordinary masterpiece for so young a man.

In spite of the size of the picture the execution is so delicate that the hairs at the end of a moustache are drawn separately with a fine brush, and yet the effect is broad and forcible. This force is gained by a powerful effect of light and shade, and by a certain breadth of treatment, but not by any vigour of handling. The hands in this early work are particularly good. In his later style Rembrandt was apt to be careless in this respect.

In his middle period, the beginning of which is marked by the so-called "Night Watch," the most amazing of all his pictures, his execution has become much more masterly. Dr. Bode speaks of a soft buttery impasto as characteristic of the works from about 1645 to 1659, and in contrast describes the painting of the heads in "The Syndics" of

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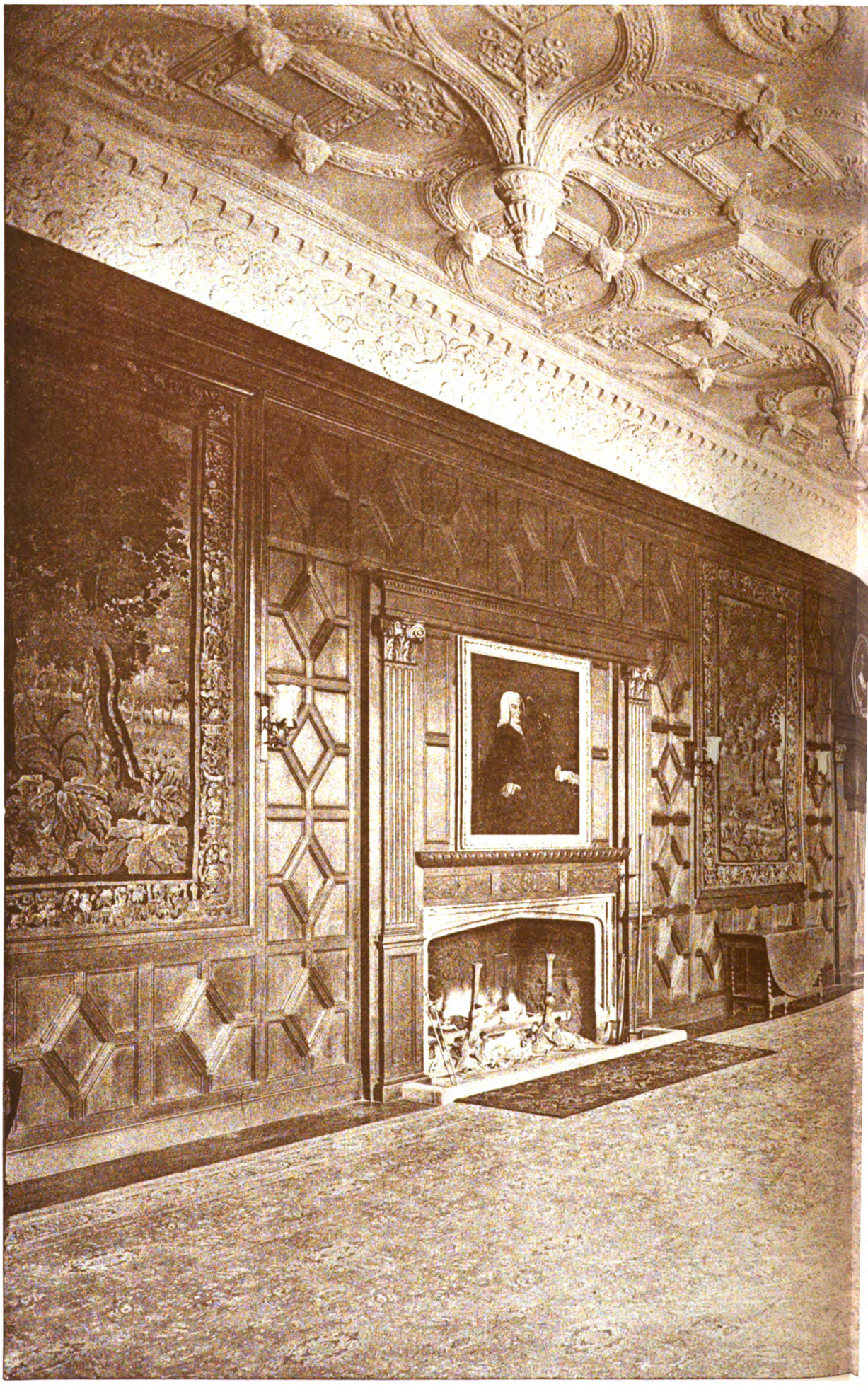
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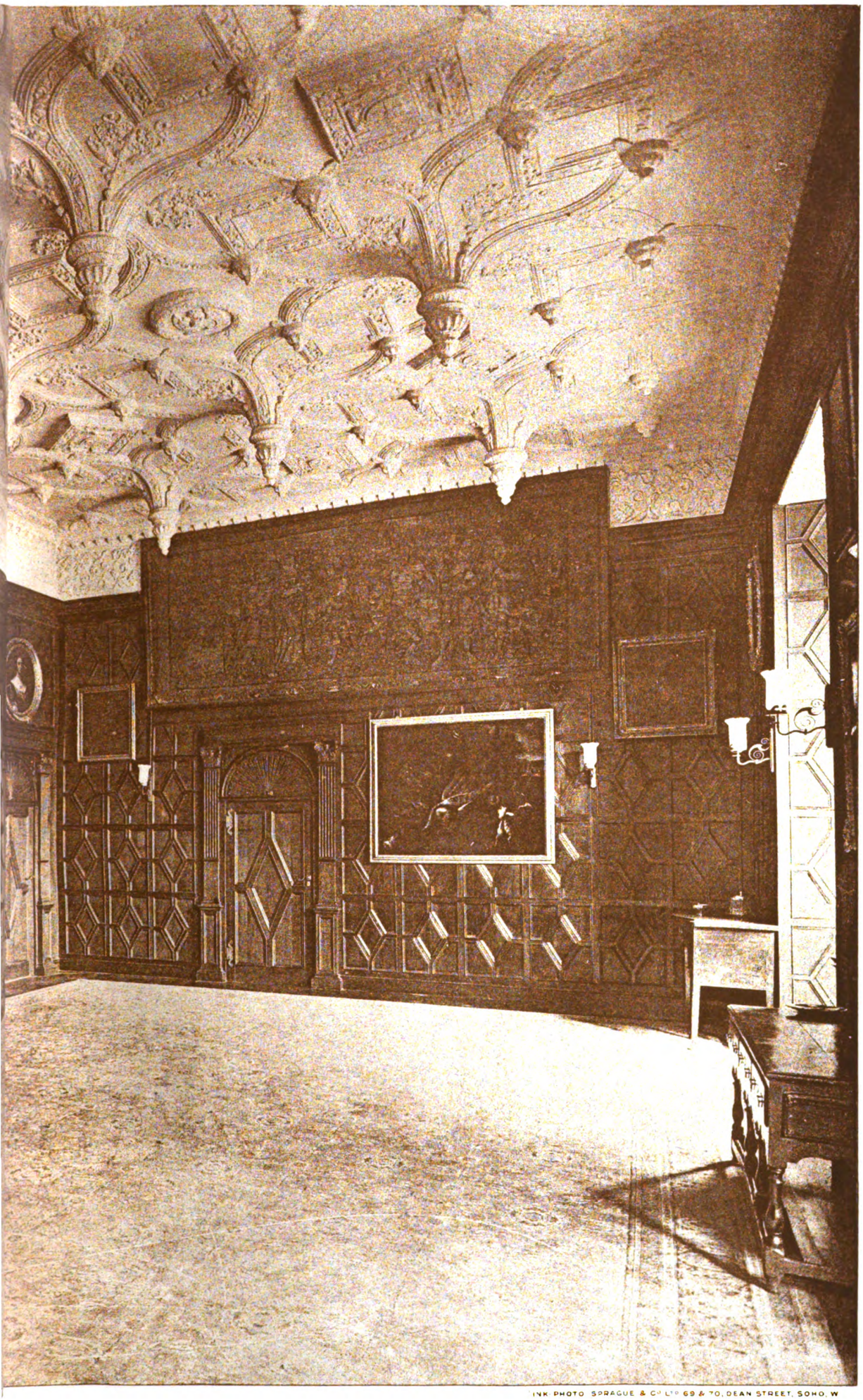
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INTERIOR OF GREAT HALL, SHARSTE
Mr. MARSHALL HAR

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Feb. 5th 1915.

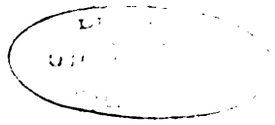


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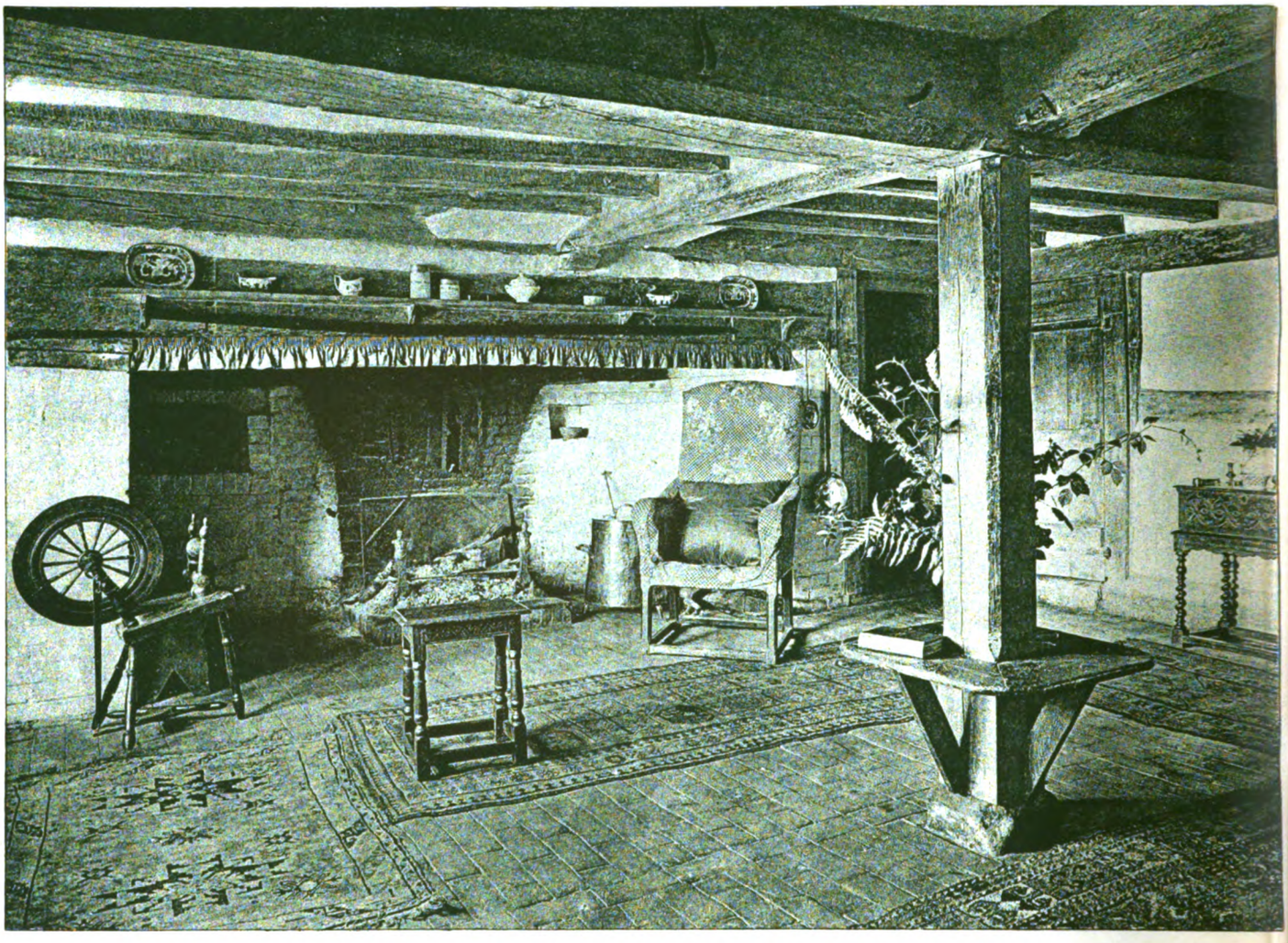
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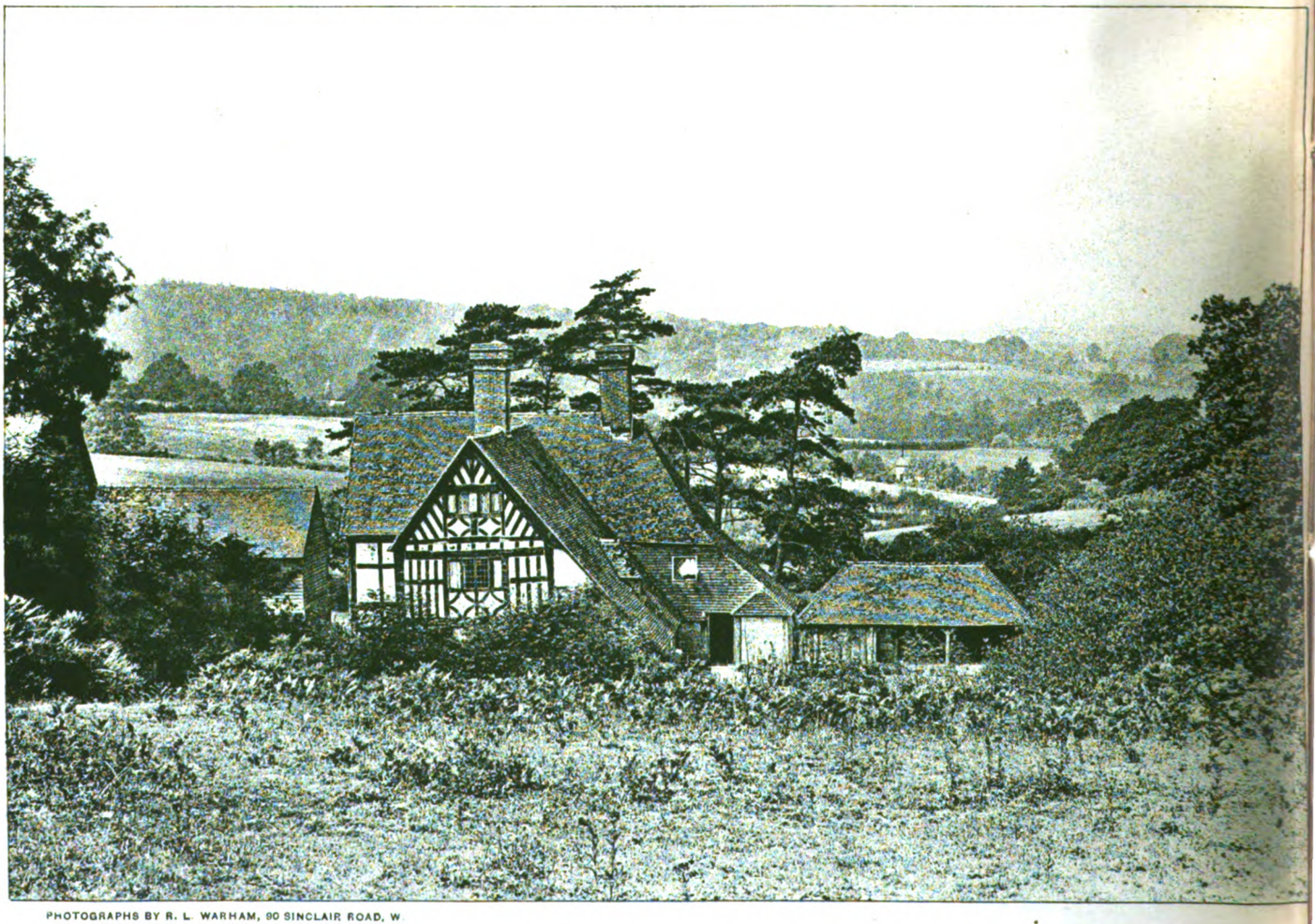


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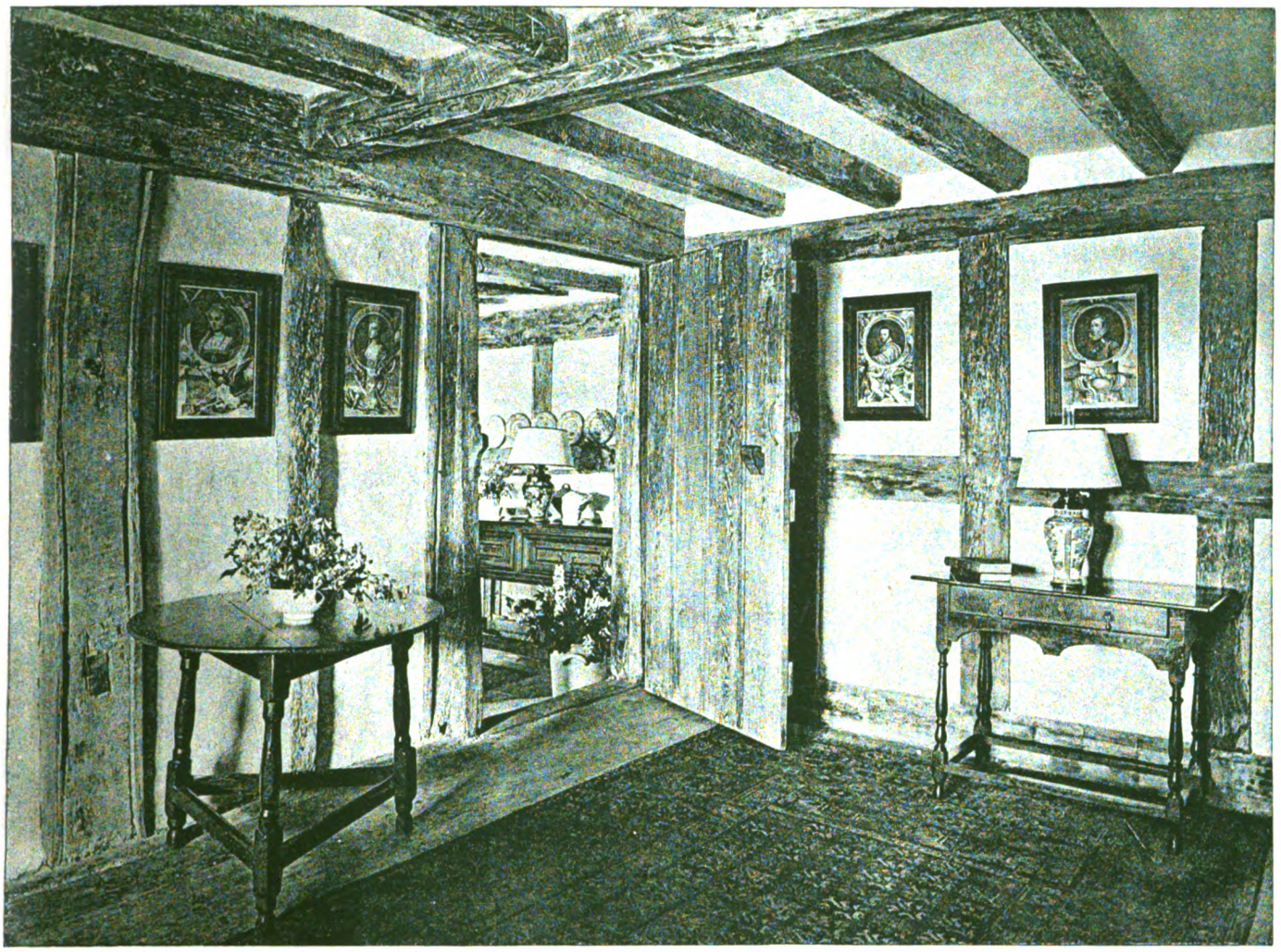


LIVING ROOM.



PHOTOGRAPHS BY R. L. WARHAM, 90 SINCLAIR ROAD, W.

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WRITING ROOM.



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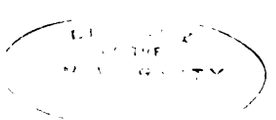
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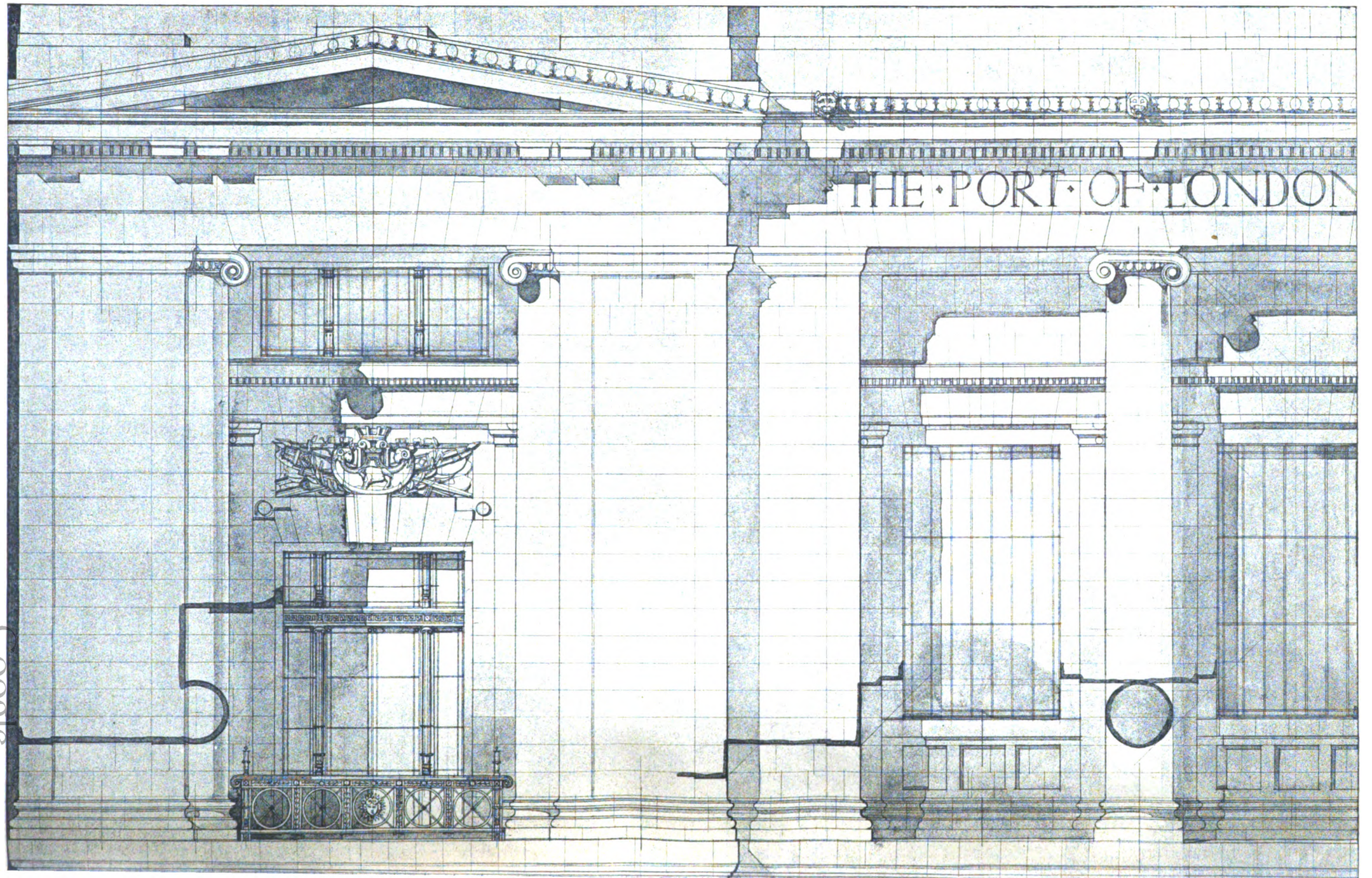
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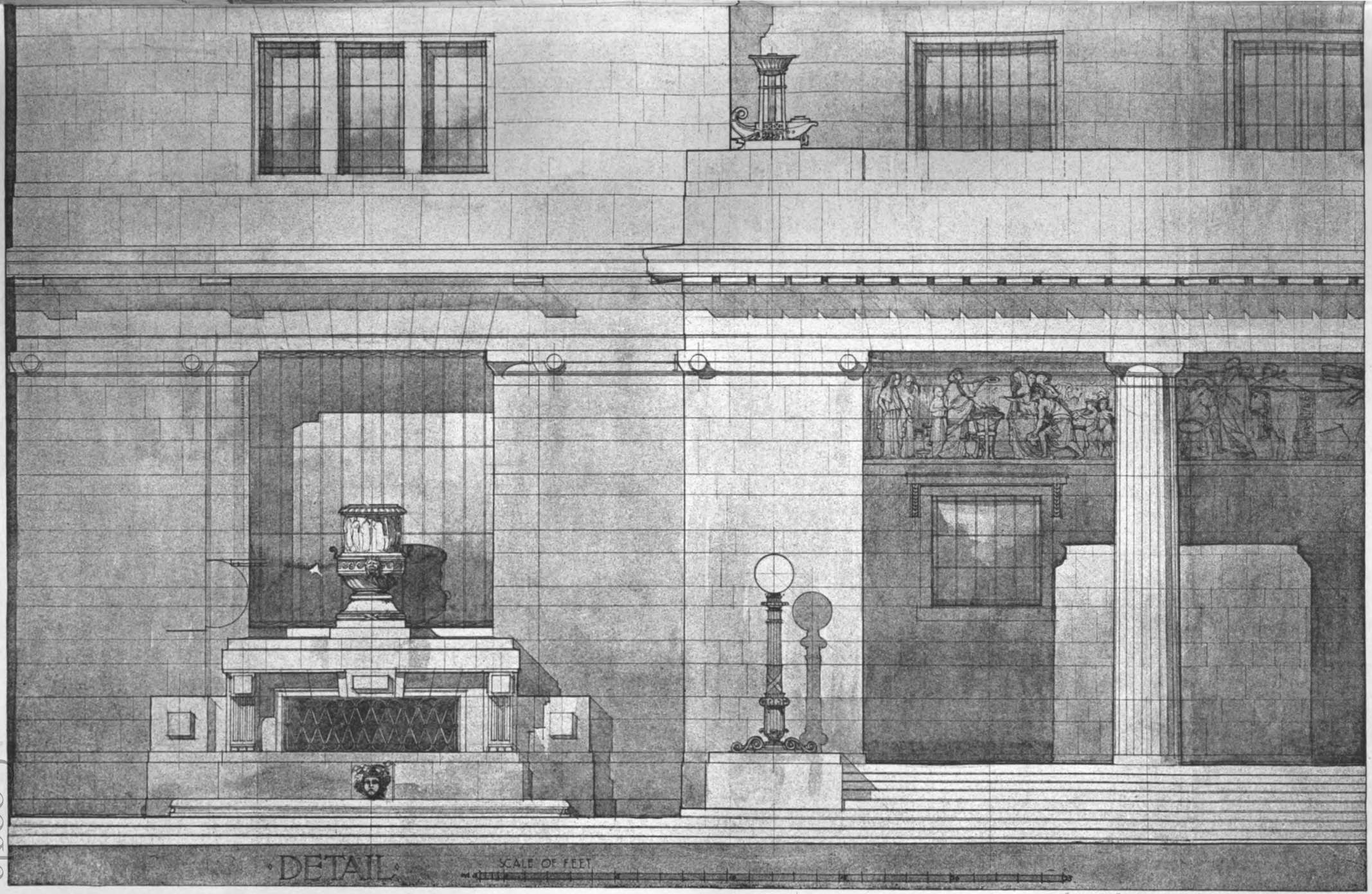
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DETAIL OF COMPETITION DESIGN FOR HEAD OFFICES OF PORT OF LONDON AUTHORITY

(Royal Academy Exhibition, 1914.)

By Mr. ROBERT ATKINSON, A.R.I.B.A.

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1661 as loose and granular, and with some exceptions I think this can be taken as fairly descriptive of the methods of his middle and latest periods.

It is in this third or latest period that Rembrandt's full mastery over the resources of oil paint is achieved. I am convinced that he then painted on a dark ground; the paint was put on thickly and so manipulated with stiff brushes as to give any variety of texture he required. He would sometimes dig right through the paint to the ground below. In this manipulation of the actual texture of the paint Rembrandt is supreme—no one has ever done it so well before or since.

The portrait of an old man in our National Gallery, painted in 1659, is a fine example of this vigorous and masterly brush work.

There is another Dutch painter, Franz Hals, whose brush work has been extolled almost as much as Rembrandt's. It is certainly supremely dexterous, but it is not so really masterly. Rembrandt, by the texture of his paint, actually renders the wrinkled skin of old age. Hals does not attempt to do this. He merely excites our wonder by showing with how few touches he can produce the illusion of a finished painting. The method of Hals appears at first sight to be extraordinarily simple. He seems to be more a draughtsman than a painter. The shadows are put in with clear, decided touches, and modelling is less thought of apparently than the accurate placing of the accents which mark the features. The hair is painted with great coarse strokes, like an enlarged drawing. Then the colour of the heads is mostly poor, hardly more than one even tone with brown or black shadows. He seems to have kept all his fine colouring, and it was sometimes very fine, for his costumes and accessories. At least, this is how I used to think of Hals' work, but of late I have begun to appreciate it better, and to find all sorts of very delicate subtleties of modelling, and even of colour, where before I had only been struck by a certain coarseness of effect. And I have lately come across a contemporary account of his work which shows that the method was not quite as simple and as straightforward as it seems.

According to Houbraken, Van Dyck said of Hals: "He had never known anyone who had such power over his brush that after laying on the portrait he could render the important touches in the lights and shades and in the right place with one stroke of the brush without blending or changing; the first stage in his portraits had the effect of an indeterminate blur, then followed the broad brush strokes as if the master said, 'Now the painter's handwriting must come in.'"

This sheds a flood of light on the technique of Hals. I certainly never suspected that the first stage of his portraits resulted in an indeterminate blur, but I can understand how valuable this preparation for the final decided touches would be. No doubt it was this that gave the subtlety, whilst the firm touches gave the dash and vigour.

This is how I conceive Hals to have painted. He used a smoothish canvas with a light yellow-brown priming. One can see this priming in the head of a man at the National Gallery. It forms the ground colour of the hair. He, no doubt, drew in his picture carefully but very broadly. Then came the indeterminate blur which gave the subtle modelling with the merest indication of the features. This was left to dry. Then at the final sitting a very thin coat of the flesh colour was passed over the whole face, broadening and simplifying but not obliterating the modelling given by the blur. Then on the wet paint came the decided touches—"the handwriting"—which gave with the fewest possible strokes the drawing of the features and the matchless vivacity of the expression.

I have dwelt so much on the method of Hals as it is the foundation of what is best in modern portraiture. Mr. Sargent's work is curiously reminiscent of Hals. He has the same admirable vivacity of pose and of expression; the same resolute determination that the finished picture shall have all the freshness of a sketch; the same apparent economy of means, the perfection of the few touches that give all the illusion of elaborate finish when seen at the proper distance.

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In some ways I regret that it should be so. It is a fine method, though not, I think, the very finest. At any rate, it is a pity that so many other fine methods should be unrepresented in modern art. For instance, I have been longing for some time for a movement of "back to Holbein." I can imagine no more wholesome corrective of the modern tendency to sloppiness and haste, but I regret to say that I can see no sign of it.

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(To be concluded.)

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CORNWALL.

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ESSEX.

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House, Hill Road, for Mr. T. J. Taylor.

District offices, Duke Street, for Prudential Assurance Company.

South Woodford.—Council school (for 700 places).

Upminster.—Public buildings.

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Bristol.—House, Leigh Woods. Messrs. La Trobe & Weston, FF.R.I.B.A., architects, 1 Unity Street.

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Southampton.—Proposed Council school, The Polygon.

HERTFORDSHIRE.

Hitchin.—Twenty cottages, Spring Road, for the Howard Cottage Society.

Nine cottages, Station Way, for the First Garden City Company, Ltd.

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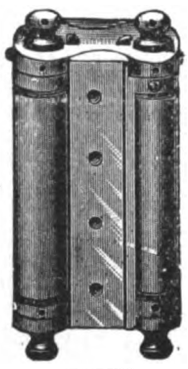
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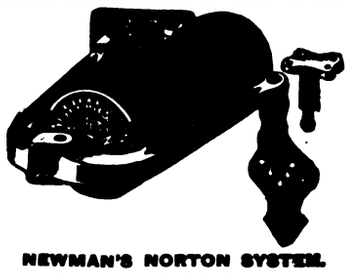




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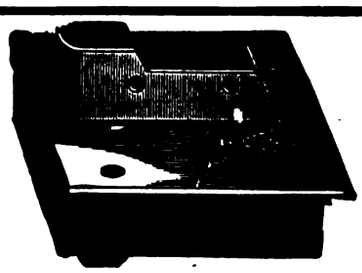
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ENGLAND—*continued.*

KENT.

Dover.—County school for boys, Frith Road and Castle Avenue.

St. Margaret's-at-Cliffe.—House, for Mr. Cotton Stapleton.

Westerham.—Eight cottages. Mr. M. M. Smith, F.R.I.B.A., architect, 55 Berners Street, London, W.

LANCASHIRE.

Accrington.—Picture palace, Abbey Street, for the Accrington Picture Company, Ltd.

Blackpool. — Proposed sanatorium for consumptives, Staining (£8,300).

Burnley.—Council schools, Cuthbert and Lionel Streets.

Fleetwood.—Police station, Wyre Dock (£4,000).

Bailey Council School (£13,850).

Horwich.—Proposed Council school.

Liverpool.—Proposed public elementary schools, Barlows and Townsend Lanes.

Longridge.—Proposed special subjects Centre.

Manchester.—Masonic Hall, Bridge Street.

Washhouses, Leaf Street, Hulme.

Proposed R.C. School, Moston.

Nelson.—Victoria Hospital: extensions. Mr. W. A. Pite, F.R.I.B.A., architect, 116 Jermyn Street, London.

Oldham.—Infants' Council school, Ward Street. Mr. F. Thorpe, architect, Union Bank Chambers.

Rishton.—P.M. Chapel, Cliff Street.

St. Helens.—St. Mark's Church: infants' school (£2,000).

LEICESTERSHIRE.

Bagworth.—Twenty-five workmen's dwellings, for the Market Bosworth R.D.C.

Coalville.—Proposed cottage hospital.

Leicester.—Royal Infirmary: extension (£3,500).

LINCOLNSHIRE.

Castle Bytham.—Four houses, for Bourne R.D.C. Mr. T. H. Hinson, contractor (£616).

Holbeach.—Two children's homes (for twenty children each), for B.G.

MIDDLESEX.

Finchley.—One hundred working-men's houses.

Pinner.—Council school (£9,650).

MONMOUTHSHIRE.

Abercarn.—Fire Station (£500).

Cwmbran.—Council school.

Newport.—Proposed special school (£10,000).

NORTHUMBERLAND.

Newcastle-upon-Tyne.—Council houses, City Road. City surveyor.

North Shields.—Proposed public elementary school, Spring Gardens, Tynemouth.

NOTTINGHAMSHIRE.

Orston.—Council school for eighty places.

Retford.—County High School for Girls: enlargements and alterations to the caretaker's house (£1,100).

Warsop.—Council school for 600 places.

SHROPSHIRE.

Clee Hill.—Council school for infants.

Hadley and Maesbury.—Council schools.

STAFFORDSHIRE.

Smethwick.—Smethwick and Oldbury Joint Hospital: extension (£3,250).

Stafford.—County Mental Hospital: senior A.M.O.'s house. Mr. W. J. Nevett, County architect, County Buildings.

West Bromwich.—Infectious Diseases Hospital: proposed extension (£2,100).

SURREY.

Croydon.—Public elementary school, Long Lane, Woodside.

Godstone.—Isolation Hospital: extension. Mr. P. E. Stenning, architect.

SUSSEX.

Flimwell.—Workhouse: additions. Mr. H. M. Caley, architect, 29 Mount Pleasant, Tunbridge Wells. Mr. H. Baldock (of Wadhurst), contractor.

Horsham.—Cottage homes, for B.G.

Council Schools, Denne Road and East Parade: alterations.

Portslade-by-Sea.—Public elementary school. Mr. P. J. Wood, County surveyor, County Hall, Lewes.

WARWICKSHIRE.

Birmingham.—The "Ten Acres" Tavern, Pershore Road: rebuilding, for Mr. A. S. Bennett.

Council school (for 1,200 places) and caretaker's house, Nansen Road, Saltley (£18,200).

Coventry.—London Road Institution: infirmary alterations, for B.G.

Grendon Common.—Two houses, for Mr. J. Butler.

WESTMORLAND.

Staveley.—Proposed infants' Council school.

WORCESTERSHIRE.

Oldbury.—Proposed Council schools.

YORKSHIRE.

Dinnington.—R.C. Church.

Dodworth.—Council houses.

Leeds.—Smallpox Hospital, Old Killingbeck: administration block. Mr. W. T. Lancashire, City engineer. Messrs. W. Rodgers & Co., contractors, Chantrell Street, York Road (£1,038).

Sheffield.—Abbey Lane Cemetery: chapel, &c. (£7,000).

South Elmsall.—Hotel, for Carter's Knottingley Brewery Company, Ltd.

South Kirkby.—"Bentinck" Hotel, Mellwood Lane, Moorthorpe. Mr. F. Hopkinson, architect, 40 Bridge Street, Worksop.

WALES.

Bedlinog.—Proposed Fire Station, for the Gelligaer U.D.C.

Port Talbot.—Workmen's Club and Institute, Talbot Square, Aberavon. Mr. F. B. Smith, architect, St. Oswald's Chambers.

SCOTLAND.

Dundee.—Board school, Bellfield Street. Messrs. MacLaren, Sons & Soutar, architects, 10 Reform Street (£22,700).

Hamilton.—Hallside Established Church: hall for 200 sittings (£800).

Lockerbie.—Public slaughter-house (£1,250).

IRELAND.

Dalky.—Thirty-five artisans' dwellings (£10,000).

Wexford.—Seventeen Council houses.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 5,816. March 7, 1914.—Improvements in or relating to means for securing more perfect combustion in domestic open fireplaces. F. W. Tannett-Walker, 18 Park Row, Leeds. This invention relates to an improved air-supplying device for use in connection with domestic open fireplaces, whereby heated air is supplied above the fire in such a manner as to cause a layer of flame of considerable

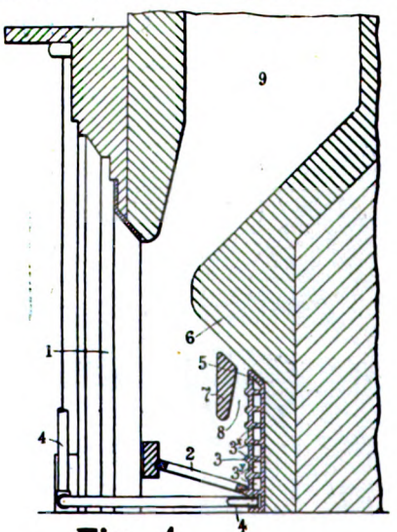


Fig. 1

intensity to be brought into direct contact with the ascending smoke so as more effectually to consume it. As applied to a fireplace having an outwardly sloping back, a vertical casing or set of pipes is employed, by way of which air is supplied above the fire as before, but instead of the exit

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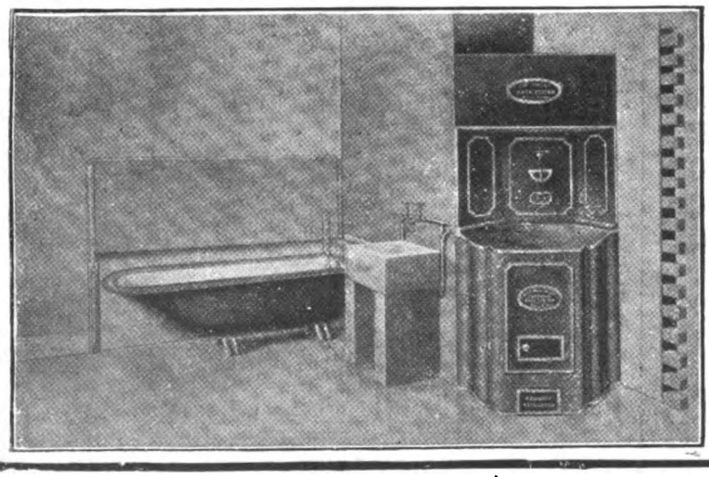
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apertures of the casing being directed downwardly towards the fire they are formed so as to direct the emerging air at an upwardly inclined angle approximately parallel with the overhanging back of the fireplace, and in conjunction with the casing the fireplace is fitted with a transverse slab of firebrick set in the sides of the fireplace at a short distance from and parellel with the casing, and having its inner face rearwardly inclined away from the front vertical face of the casing so as to provide between itself and the said casing a constricted passage or throat whose upper and narrowest portion is adjacent to the overhanging back of the fireplace and opposite the exit apertures of the casing. Figs. 1, 2, and 3 are respectively a sectional side elevation, a part sectional front elevation, and a sectional plan of a domestic open fireplace. Within the fireplace 1 and behind

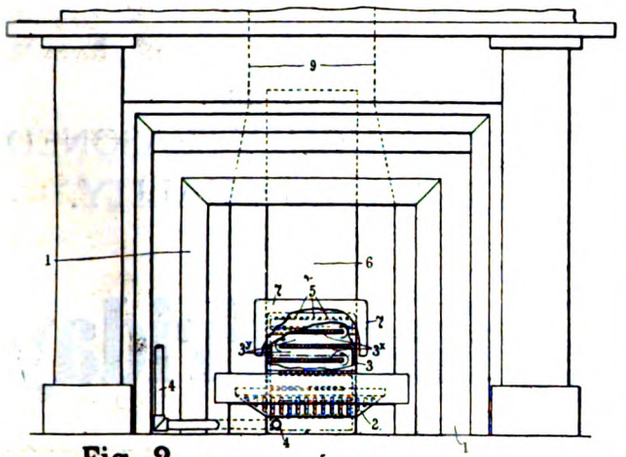


Fig. 2

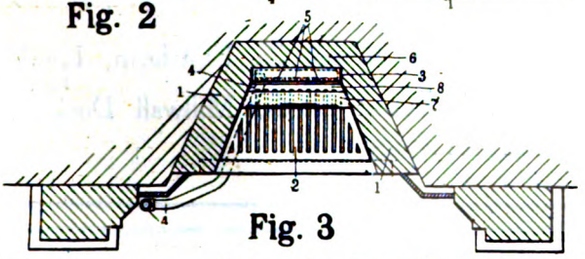


Fig. 3

the grate 2 is a vertical casing 3, preferably subdivided internally by incomplete horizontal partitions 3x so as to provide a continuous air passage 3y leading from the base of the casing 3 to the upper end, to which passage 3y air is supplied by way of a pipe 4 whose opposite open end (not shown) is situated at a distance from the casing 3, so as to ensure a continuous flow of cool air into the lower part of the casing. At the upper front end of the casing 3 is formed a series of exit apertures 5 arranged at an upwardly inclined angle so as to cause the air emerging from the casing 3 to take the form of upwardly directed jets following a path approximately parallel with the overhanging back 6 of the fireplace 1, while in conjunction with the casing 3 the fireplace 1 is fitted with a transverse slab 7 of firebrick or the like set in the sides of the fireplace 1 at a short distance from and parallel with the casing 3, and having its inner face rearwardly inclined away from the front vertical face of the casing 3 so as to provide between itself and the casing 3 a constricted passage or throat 8, whose upper and narrowest portion is adjacent to the overhanging back 6 of the fireplace 1 and immediately opposite the exit apertures 5 of the casing 3. The supply of cool air conducted by way of the pipe 4 enters the casing 3 at its base and, becoming heated, passes upward until it finally emerges from the apertures 5, and the jets of heated air pass upward through the narrow space, whereby a current of flame and heated gases is drawn from the back part of the fire through the throat and produces, as in a furnace, a layer of flame of considerable intensity up the overhanging back of the fireplace 1.—Dec. 23, 1914.

PATENT SPECIFICATIONS PUBLISHED JANUARY 28, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 15,879. July 9, 1913.—Dr. P. R. Wilde, 23 The Circus, Bath. Heating by electricity.

22,423. Oct. 4, 1913.—E. R. Sutcliffe, Leigh, Lancs. Tiles, roof sheets, and the like.

16,243. July 15, 1913.—W. A. Oakley, 19 Penkivil Street, Bondi, near Sydney, N.S.W. Hydraulic cementing material or cement or plaster and manufacture of same.

22,525. Oct. 6, 1913.—A. B. Reck, The Reck Heating Company, Ltd., Esromgade, Copenhagen. Method of operating hot-water apparatus.

24,507. April 28, 1914.—Robert Fletcher, 25 St. Patrick's Road South, St. Annes-on-Sea, and Frederick Stork, Shepherds Yard, St. Annes-on-Sea. Method of and means for applying polish to and for polishing floors, wooden surfaces, and such like.

27,111. Nov. 25, 1913.—Wilkinson, Heywood & Clark, Ltd., F. G. Kidd, and William McLaughlin, Storer's Wharf, Poplar, E. Fluid-tight joints for shafts and the like of agitators of paint and like dipping tanks.

29,964. Dec. 30, 1913.—Dated under International Convention Jan. 2, 1913. A. V. Clorius and O. T. Clorius, 17 Niels Ebbesenvej, Robenhavn, Denmark. Automatic heat-regulating apparatus for steam, hot-water plant, or the like.

30,012. Dec. 31, 1913.—R. G. Marks, 54 Zetland Street, Southport, and Francis Helm, Ltd., Victoria Foundry, Padiham, Lancs. Stoves for cooking, baking, and other like purposes.

Any of the above specifications may be obtained from J. D. Roots & Co.

ULSTER SOCIETY OF ARCHITECTS.

THE annual general meeting of the Ulster Society of Architects was held last week, Mr. N. Fitzsimons, President, presiding over a large attendance of members.

The Hon. Secretary presented the annual report, which stated: The year which has just passed has probably been the most momentous year in the world's history—a year in which practically all nations have been plunged in the horrors of war. The fine arts, which flourish in times of peace, have suffered a serious set-back owing to the great conflagration; and the latter half of 1914 was, as was to be expected, a very quiet time in the profession. Your Council has been throughout the year in correspondence with the R.I.B.A. regarding the recently-formed school of architecture at the Belfast Technical Institute, with a view to having the school approved by the Board of Architectural Education for the preparation of students for the Institute examinations. The Board deputed Mr. Paul Waterhouse, M.A., to visit and report on the school and its work. Mr. Waterhouse visited Belfast on November 26, and, together with the members of your Council, made an official inspection of the school. Following on his report, your Council are very pleased to inform you that the school has now been recognised by the Board of Architectural Education as one of its approved schools. Since the declaration of war the architects in Ulster have responded nobly to the call of their King and country. Already twelve of the profession have joined the Colours, and are now either at the Front or in training at the different camps.

The following officers and Council were elected for the ensuing year: President, Mr. N. Fitzsimons, F.R.I.B.A.; Vice-President, Mr. R. E. Buchanan; Hon. Treasurer, Mr. H. Seaver, B.E.; Hon. Secretary, Mr. T. W. Henry, M.S.A. Members of Council—Messrs. R. M. Young, F.R.I.B.A., W. J. Gilliland, F.R.I.B.A., T. Houston, J. J. M'Donnell, J.P., and G. Sands. Assoc. Members of Council—Messrs. R. M. Close and H. Lamont. Hon. Auditors—Messrs. F. H. Tulloch and J. A. Hanna.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Some Work of Thomas H. Mawson.

SIR,—I have just seen your article on Mr. Mawson's work at Exeter and at Ottawa, in THE ARCHITECT for January 8, 1915, and feel that, as his first pupil and life-long friend, I must really take up the matter on his behalf.

I realise, of course, that a reviewer must be left to give his untrammelled opinion on the book he reviews within the bounds of legitimate criticism, and had your contributor confined himself to this I should have had no complaint to make.

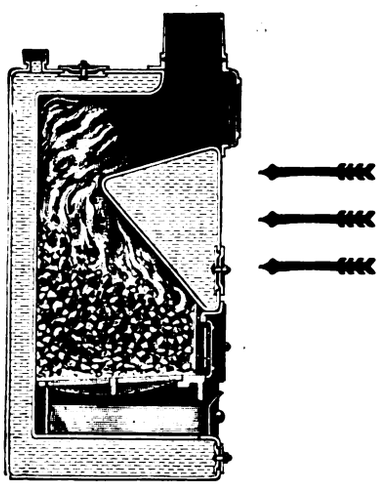
To begin with, the opening portion, his article, implies

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that Mr. Mawson has left his proper sphere as a garden designer to dabble in town planning. Now, as a matter of fact, Mr. Mawson has been a town planner throughout his professional career. The fact that he calls himself a landscape architect shows that he intends this to be understood, and that he includes within the scope of his practice both civic art and landscape gardening. I well remember that, when first I came to work for him, over twenty-one years ago, his scheme for the creation of a new town in Shropshire for Lord Forrester had just been completed, and about that time won first premium in open competition for the work. From that time to this there has almost always been some sort of a town-planning problem on the boards.

With regard to the Exeter scheme, your contributor assumes that Mr. Mawson has proposed the wholesale destruction of valuable property in a quite impossible manner. As a matter of fact, the property was bought by the Corporation and its destruction was agreed upon, partly under a slum clearance scheme, before ever Mr. Mawson was consulted, and I think that your contributor ought not to have been silent on the fact that Mr. Mawson so felt the proposal to sweep away the old church of St. Pancras that, on his own initiative, he submitted an alternative scheme for its retention.

With regard to Mr. Mawson's Ottawa scheme, I feel that your contributor, before tackling a subject like this, should know more of Canadian conditions than he obviously does. He should remember that, in the first place, a title which would be flamboyant for an estate in this country may not be so for one in Canada, where the prairie of to-day is the busy city of to-morrow, and where, for instance, a place of eighty thousand inhabitants can grow up in less than twenty years. I wonder whether, when he gives such prominence to the inuflence of the car route, he knows anything of the electric railway system of that very-go-ahead town, and its unique features which make it quite different to either an electric railway or a tram route in this country. In speaking of the "penchant of the garden architect for sinuous curves" your contributor again shows his entire lack of any knowledge of the conditions prevailing which would not have allowed of any sort of a formal lay-out on account of the contours of the ground, and as to the provision for bakehouses, garages, stables, smithies, &c., I would point out that he shows an utter ignorance of the necessary conditions of urban existence if he thinks it is left to the town planner to say whether he shall include these or not in his suburb. They must be there, and the best thing he can do is to put them out of sight and sound; and if your contributor can see some better way of doing this than by putting them behind screens of trees right away from the roadway, and at the same time keeping them easily accessible, I am sure no one would be more delighted than Mr. Mawson himself to have the benefit of his genius in dealing with an exceedingly difficult problem.

As to your contributor's closing effort to prevent the firm for which I work ever getting any more town planning to do, may I suggest that in cases where we are asked to report upon the cost of a scheme we are always pleased to do so? But in the two cases under review we were specifically told that this was not required, and that only in the latter case were were asked to keep the amount of road-making within reasonable bounds. In fact, it must be obvious that if the estate is to be developed this is the only means by which one can eventually economise.—Yours truly,

JAMES CROSSLAND
(Licentiate R.I.B.A., A.R.San.I., Gold Medallist Nat. H. and T.P. Council).

High Street House, Lancaster, January 28, 1915.

Names and Nationality.

SIR,—I have been annoyed by anonymous post cards which have been sent to some of my clients, and I should esteem it a very great favour if you would publish the enclosed, which was sent to an architect friend of mine (under whose supervision I have carried out several large contracts), together with the letter I received from him in relation thereto.—Thanking you in anticipation, I am, yours faithfully, ROB. SCHAUB.

14 John Street, Bedford Row, London, W.C., January 18, 1915.

[Copy of post card sent from London, W.C., December 8, 1914, to Marshall Harvey, Esq., 36 Station Street, Sittingbourne.]

SIR,—It is to be hoped you will discontinue having any dealings with Schaub, an alien enemy and a filthy German to boot, who said he hoped his countrymen would invade England and treat us as they had treated the poor Belgians. Schaub is a hater of the English, as all Germans are.

A PATRIOTIC ENGLISHMAN.

[COPY OF LETTER.]

36 Station Street, Sittingbourne,
December 23, 1914.

DEAR MR. SCHAUB.—I am sorry to find you have an enemy who is trying to do you harm by sending lying anonymous post cards (one received by me I herewith enclose you), as some people might take it for granted that it was true, without troubling to find out.

For some years I have understood that you were a Swiss, but since receiving the anonymous post card have satisfied myself, beyond any *doubt*, that you are not a German.

I hope you will not take my inquiries as any slur on your character. I looked upon the post card merely as some dirty trick from an enemy of yours, but to be able to contradict it, I thought it advisable to get reliable proof.

I shall inform Mr. Faunce de Laune of the inquiries I made and the replies I got, so that there shall be no doubt in his mind if he has received a similar post card.

I do hope you will be able to find out who sent it and make them smart, which they justly deserve. I cannot but think that the sender is someone either in your employ, or who has been, or who has had something to do with the Sharsted job, or other works you have done for me, for them to know my address. Probably someone with whom you have had some difference.

You may be able to form an opinion of who it is and set a trap to catch them. *Do try!*

Wishing you a happy Christmas and a prosperous 1915, faithfully yours,

(Signed) MARSHALL HARVEY.

Fuel Supplies in War Time.

SIR,—The following two paragraphs from the current Press deserve to be noted by all interested in the use of fuel, whether in the domestic grate, the steam boiler, or the factory furnace:—

"Threatened Coal Famine in the Midlands.—Birmingham and the Midlands generally are threatened with a coal famine. Not only are householders menaced, but manufacturers cannot obtain regular supplies, and if the present scarcity continues some of them will have to close down. . . . A variety of causes have contributed to this, the most important of which probably is the deficiency of miners, owing to enlistment."

"Amsterdam, January 28.—An order to economise coal has been issued by the German railway administration at Essen. It has further been officially pointed out to housewives that coke is a much cheaper form of fuel than coal, and gives a better heat."

Here is a point certainly where we may well learn from the enemy. It cannot be too widely known—not only by housewives, but by factory managers and other large users of fuel—that there are in many districts full stocks of coke; that it is, at the same price per ton as coal, a much cheaper form of fuel, as a much larger percentage of its weight is readily combustible material; that in kitchen ranges "broken" coke is particularly useful; and that recent experiments have demonstrated that coke can be advantageously employed for steam raising with but slight variations in the furnace arrangements.

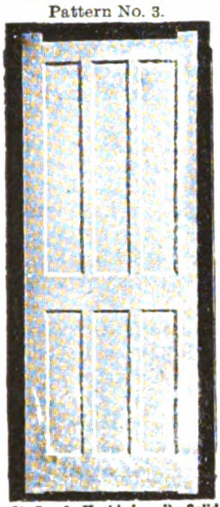
It is therefore to the advantage both of the community and of the individual at the same time that the fullest possible use should be made of our coke supplies.—Yours faithfully, A STUDENT OF FUEL ECONOMICS.

MR. REGINALD BLOMFIELD, R.A., Past-President R.I.B.A., and Mr. Ernest Newton, A.R.A., P.R.I.B.A., have received the honour of election as "Membres Correspondants" of the Société des Architectes diplômés par le Gouvernement Français.

THE Incorporated Church Building Society held its monthly meeting on the 21st inst. Grants of money were made in aid of the following objects—viz., building a new church at Gorse Hill, St. Peter, Stretford, Manchester, £150; and towards reseating and repairing the churches at Limehouse, St. Peter, Middlesex, £20; Northampton, St. Giles, £30; and Zeal Monachorum, St. Peter, Devon, £15. In addition to this the sum of £300 was paid towards the repair of seventeen churches from trust funds held by the Society, and three grants were paid for works completed.

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Mrs. H. M. Fletcher.	Philip E. Webb.
Cecil C. Brewer.	H. M. Fletcher.
Stanley Hamp (Treasurer).	H. Austen Hall.
	F. R. Yerbury (Secretary).

A Committee has been appointed by the Council of the Architectural Association under the Chairmanship of Mrs. Maurice E. Webb in connection with Architectural Association War Service Bureau, for the purpose of providing necessities and extra comforts for the very considerable number of men connected with the Royal Institute of British Architects, Architectural Association, Society of Architects, and Architects' and Surveyors' Approved Society, and the architectural and surveying professions generally who are serving with the Colours.

The Committee now appeals for assistance in its endeavours to make as comfortable as possible the lot of those who have so splendidly responded to their country's call. Owing to the generous assistance already afforded, a very large number of parcels have been despatched both to men actually at the front and to those in training camps and barracks, and the very kind and appreciative letters which have been received from the men confirms the Committee's opinion that the work it has undertaken is meeting a real need.

The Committee has also undertaken to look after the wives and dependents of the mechanics who have been recruited by the A.A. War Service Bureau.

The Committee especially appeals to the wives and daughters of architects and surveyors, and other ladies connected with the building trades, for gifts both in kind and money in order to enable it to meet the heavy and increasing demand which is being made upon its resources.

As a result of careful inquiry, it has been ascertained that the articles contained in the following list are most needed:—

Flannel Body Belts.	Soap.	Magazines.
Scarves.	Tobacco.	Chocolate.
Sleeping Helmets.	Cigarettes.	Leather Boot Laces.
Flannel Shirts.	Papers (Professional and otherwise).	Peppermints (in tins).
Socks.		Dubbin (clear).
Towels.	Igniters.	

All contributions, which will be gratefully received, should be sent to Mrs. Maurice E. Webb, at the Architectural Association, 18 Tufton Street, Westminster. A list of contributors will be published in the "Architectural Association Journal" from time to time.

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THE
Architect and Contract Reporter.
FRIDAY, FEBRUARY 5, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive sketch plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

CONTRACTS OPEN.

ABERGAVENNY.—Feb. 16.—For alterations and additions to the Abergavenny police court and station, for the Monmouth County Standing Joint Committee. Deposit £1 1*s.* Mr. W. Tanner, F.S.I., county surveyor, Newport, Mon.

ASHBY-BY-BRIGG.—Feb. 18.—For erection of additions to the new Council school at Ashby-by-Brigg, for the Lindsey County Council Education Committee. Send applications and £2 2*s.* deposit by Feb. 9 to Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

BALDOCK.—Feb. 15.—For erection of six cottages with outbuildings at Hinxworth Place, Farm, for the Hertfordshire County Council. Mr. W. H. Crozier, land agent, 60 Fore Street, Hertford.

BARNSLEY.—March 4.—For erection of a new Town Hall in Church Street. Deposit £2 2*s.* Mr. W. P. Donald, Town Clerk, Town Clerk's Office, Barnsley.

BATLEY.—Feb. 13.—For the whole of the works for new building for purification plant at the Batley Public Baths. Borough Surveyor, Batley.

BEESTON.—Feb. 17.—For erection of pumping station, destructor, office and mess room, &c., on the sewage disposal site at Beeston, Notts, for the Beeston Urban District Council. Deposit £2 2*s.* Mr. W. H. Radford, C.E., engineer, Albion Chambers, King Street, Nottingham.

BIRMINGHAM.—Feb. 12.—For erection of a motor garage and handcart shelter at Birmingham head post office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Assistant Architect, H.M. Office of Works, 42 Paradise Street, Birmingham, and H.M. Office of Works, &c., Storey's Gate, S.W.

BRIGHTLINGSEA.—Feb. 24.—For the alterations to be carried out at the Wesleyan day school during the Easter holidays, for the Trustees. Rev. F. Rabey, The Manse, Brightlingsea, Essex.

CHURWELL.—Feb. 8.—For erection of lime pits and building (in one contract) at Millshaw Leather Works, for Messrs. W. L. Ingle, Ltd. Mr. T. A. Buttery, Licentiate R.I.B.A., architect, Queen Street, Morley, and 1 Basinghall Square, Leeds.

COVENTRY.—Feb. 10.—For the works required to be executed and materials to be supplied in the erection of workmen's dwellings in Goring Road, Stepney Road, and Clay Lane, for the Housing Committee. Deposit £3 3*s.*, with the City Treasurer. Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

COVENTRY.—Feb. 10.—For the enlargement of Little Heath Council School, Coventry, for the Education Committee. Deposit £1 1s. Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry.

COVENTRY.—Feb. 12.—For the works required to be executed and materials supplied in erection of a pavilion at Spencer Park, for the Baths and Parks Committee. Deposit £1 1*s.*, with the City Treasurer. Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

CREWE.—Feb. 10.—For erection of a pavilion, &c., for the bowling green at the Queen's Park, for the Town Council. Deposit £1. Mr. G. Eaton Shore, borough surveyor, Earle Street, Crewe.

EDMONTON.—Feb. 24.—For erecting and finishing fit for use an additional storey over the Board-room block and certain alterations to same at Edmonton House, Bridport Road, Upper Edmonton, for the Guardians of Edmonton Union. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

FLAX BOURTON.—Feb. 20.—For erection of six cottages at Flax Bourton, for the Somerset County Works Committee. Mr. E. Stead, A.M.I.C.E., county surveyor, Wells.

GILDERSOME.—Feb. 10.—For the whole or any portion of the work required in erection of a four-set woollen mill (extension) at Gildersome, Yorks, for Mr. W. Morris. Send names by Feb. 10 to Mr. J. Auty, A.R.I.B.A., architect, Peel Street, Morley.

GREETLAND.—Feb. 15.—For the mason's (labour only), joiner's, plumber's and glazier's, slater's and plasterer's work required in the erection of fifteen houses at Clay House Lane. Messrs. R. Horsfall & Sons, architects and surveyors, 22A Commercial Street, Halifax.

HALIFAX.—Feb. 9.—For the several works required in connection with alterations and additions to residence, Burnley Road. Send names by Feb. 9 to Messrs. C. Williams & Sons, architects, Post Office Buildings, Commercial Street, Halifax.

HANDSWORTH.—Feb. 9.—For repairs, &c., to sixteen houses at Ash Grove, Handsworth, for the Great Western Railway. The Engineer, Wolverhampton Station.

HEMSWORTH.—Feb. 19.—The West Riding Education Committee invite whole or separate tenders for the following works in connection with additional classrooms at the Hemsworth Kinsley Council School—viz.: Builder, joiner, slater, plumber, plasterer, painter. The Education Architect, County Hall, Wakefield. Send £1 deposit by separate letter to the West Riding Treasurer, County Hall, Wakefield.

ILFORD.—Feb. 9.—For erection of a building providing additional lavatory accommodation at the rear of the Town Hall, for the Ilford Urban District Council. Deposit £1. Mr. H. Shaw, M.I.C.E., engineer and surveyor, Town Hall, Ilford.

IRELAND.—Feb. 10.—For the reconstruction of the old portion of their Portadown Station roof, for the Great Northern Railway Co. (Ireland). Deposit £2 2*s.* The Engineer's Offices at Dublin and Belfast. Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

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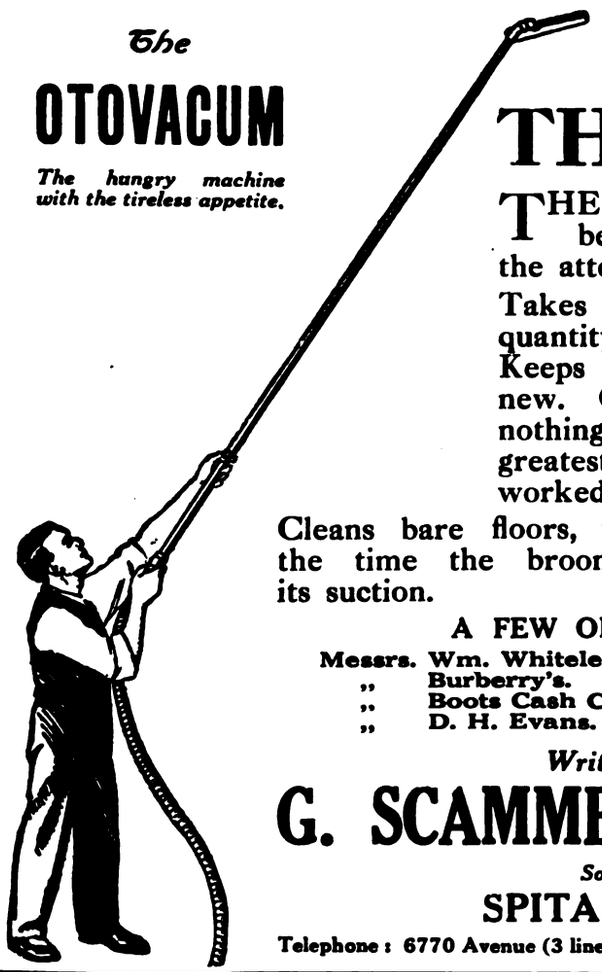

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IRELAND.—Feb. 11.—For the remodelling of the premises, 34 Dame Street, Dublin, recently purchased by the Irish United Assurance Society for the accommodation of its head office staff. Mr. T. F. McNamara, architect, 192 Great Brunswick Street, Dublin.

IRELAND.—Feb. 13.—For building and fencing twenty-seven labourers' single cottages, for the Milford Rural District Council. Mr. S. Watters, clerk, Council Offices, Milford.

IRELAND.—Feb 20.—For erection and furnishing of National school buildings at St. Patrick's (Holywell), co. Fermanagh. The Royal Irish Constabulary Barracks, Belcoo, co. Fermanagh.

LEEDS.—Feb. 10.—For plumber's work and joiner's work at Tuberculosis Sanatoria, Killingbeck, for the Leeds Subsanitary (Hospitals) Committee. Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

LEEDS.—Feb. 17.—For bricklayer and masons', carpenter and joiners', plumbers', slaters', plasterers', concretors', smith and ironfounders', painters', heating engineers', and electric work required in connection with the erection of proposed infants' school, Hough Lane, Bramley, for the Leeds Education Committee. The Education Department (Architect's Section), Education Offices, Calverley Street, Leeds.

LITTLEHAMPTON.—Feb. 10.—For erection of an isolation hospital at Wick, near Littlehampton, for the Littlehampton Urban District Council. Deposit £1 1s. Mr. H. Howard, F.S.I., surveyor, Town Offices, Littlehampton, Sussex.

LITTLEHAMPTON.—Feb. 10.—For erection of public lavatories, &c., at Sea View Cottage, near Parade, for the Littlehampton Urban District Council. Deposit £1 1s. Mr. H. Howard, F.S.I., surveyor, Town Offices, Littlehampton, Sussex.

LONDON.—Feb. 11.—For the repair and renewal of the iron and lead gutters, and also for the repair of the lanterns to the stable roof of the Council's depôt buildings, Stockwell Road and Combermere Road, Stockwell, for the Lambeth Borough Council. Mr. H. Edwards, C.E., borough engineer, Town Hall, Brixton Hill, S.W.

LONDON.—Feb. 11.—For the reconstruction of roofs to Sheepshanks Galleries, &c., Victoria and Albert Museum, South Kensington, S.W., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—Feb. 18.—For underpinning and other work in connection therewith at their school in Hornsey Road, N., for the Guardians of St. Mary, Islington. Send applications and £2 by Feb. 15 to Mr. E. J. Harrison, 9 Gray's Inn Square, W.C.

NEWBRIDGE.—Feb. 15.—For erection of a higher elementary school to accommodate 300 children, together with caretaker's house, at Newbridge, for the Monmouthshire Education Committee. Deposit £2 2s. Mr. J. Bain, F.R.I.B.A., County Council Offices, Newport.

NEWMARKET.—Feb. 8.—For erection of cottage homes on the Exning Road (opposite the schools), Newmarket, for the Guardians. Mr. J. Flatman, architect, Beaufort Studio, Newmarket.

NORWICH.—Feb. 17.—For erection of a pair of children's homes, for the Guardians. Deposit £1 1s. Messrs. Morgan & Buckingham, architects and surveyors, 1 Upper King Street, Norwich.

PONTYPOOL.—Feb. 6.—For erection of shop and cottage at Albion Road, for the Abersychan, British, and Talywain Industrial Co-operative Society, Ltd. Send applications by Feb. 6 to the Secretary of the Abersychan Co-operative Society, Ltd., High Street, Abersychan.

RADCLIFFE.—Feb. 13.—For the construction and completion of sixteen dwelling-houses (in eight blocks of two each) on the Stand Lane site, for the Radcliffe Urban District Council. Deposit £2 2s. Mr. W. L. Rothwell, engineer and surveyor, Council Offices, Radcliffe.

ST. HELENS.—Feb. 23.—For erection of a refuse destructor, together with all contingent works, at the Parr Depôt, within the borough. Deposit £2. Mr. A. W. Bradley, M.Inst.C.E., borough engineer, Town Hall, St. Helens.

ST. MAWES (CORNWALL).—Feb. 16.—For erection of four dwellings for working classes at St. Just Lane, near St. Mawes, for the Truro Rural District Council. Mr. C. Hancock, clerk, 12 Princess Street, Truro.

SCOTLAND.—Feb. 11.—For the following works required in connection with the proposed erection of three tenements of dwelling houses in Moncur Street, for the Glasgow Corporation—viz.: (1) Digger, mason, and brick works; (2) carpenter, joiner, and ironmongery works; (3) slater works; (4) plumber and gasfitter works; (5) plaster work; and (6) painter work. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—Feb. 12.—For the several works required in the erection of waiting-rooms, model-yacht house, &c., at Richmond Park, for the Glasgow Corporation. Mr. J. Whitton, superintendent of parks, 249 George Street, Glasgow.

SCOTLAND.—Feb. 16.—For erection of three double cottages for workmen at Lochgoilhead, for the Glasgow Corporation. Deposit £1 1s. Mr. J. Whitton, superintendent of parks, 249 George Street, Glasgow.

SCOTLAND.—Feb. 17-24.—For the brick and mason, carpenter and joiner, slater, plasterer, plumber, electric lighting, and painter works of (1) additions to administrative buildings; (2) new tuberculosis hospital to be erected at Heathfield Hospital, Ayr, for the Corporation. Tenders must be lodged for No. 1 by 9.30 A.M. on Feb. 17, and for No. 2 by 9.30 A.M. on Feb. 24. Mr. J. Young, burgh surveyor, Town Buildings, Ayr.

SHEFFIELD.—Feb. 15.—For erection of bowling-green pavilions in timber and brick, with slate roofs, at Crookesmoor recreation ground, Whiteley Woods and Hillsborough Park, in the city of Sheffield, for the General Purposes and Parks Committee. Deposit £1. Mr. C. F. Wike, M.I.C.E., city engineer, Town Hall, Sheffield.

SHEFFIELD.—Feb. 15.—For the erection of conveniences in various public parks and recreation grounds within the city, for the General Purposes and Parks Committee of the City Council. The Improvement Surveyor, Town Hall, Sheffield.

SHIPTON BELLINGER.—Feb. 10.—For the erection of a pair of cottages for county roadmen on a site near where the road from Grateley Station to Shipton Bellinger crosses the road from Andover to Amesbury, for the Hampshire County Council. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

SHOEBURYNESS.—Feb. 6.—For additions and alterations to the Shoeburyness (Richmond Avenue) Council School, for the Essex Education Committee. The work involves the erection of a new department to accommodate 320 children, and also an additional classroom to the existing building. Send applications and £2 2s. deposit by Feb. 6 to Mr. Herbert Bell, clerk to the Rochford District Committee, 38 County Chambers, Weston Road, Southend-on-Sea. Mr. G. T. Forrest, F.G.S., architect, 79 Duke Street, Chelmsford.

SOUTHALL.—Feb. 14.—The Southall-Norwood Urban District Council are about to proceed with the erection of fifty-four houses and to purchase, direct, the necessary materials required in the construction of the houses, and also to let by tender the labour required in the various trades. Firms who are desirous of submitting prices are asked to send their names to Mr. R. Brown, M.I.C.E., M.I.M.E., F.S.I., &c., engineer and surveyor, Town Hall, Southall.

SOUTHEND-ON-SEA.—Feb. 12.—For construction of an electricity sub-station at Thorpe Bay, for the Corporation. Deposit £2 2s. Mr. E. J. Elford, M.I.C.E., borough engineer, Municipal Buildings, Southend-on-Sea.

STOCKPORT.—March 1.—For erection of a refuse destructor, including destructor house, furnaces, auxiliary plant, &c., at Heaton Lane, within the borough. Deposit £2 2s. Mr. J. Atkinson, A.M.I.C.E., borough surveyor, Town Hall, Stockport.

STOKE-ON-TRENT.—Feb. 25.—For the reconstruction of a portion of the roofing at the Hanley Baths, for the Corporation. The Borough Surveyor, Town Hall, Stoke-on-Trent.

TADCASTER.—Feb. 12.—For alterations and additions to the union workhouse, for the Guardians. Messrs. Bromet & Thorman, architects and surveyors, Tadcaster.

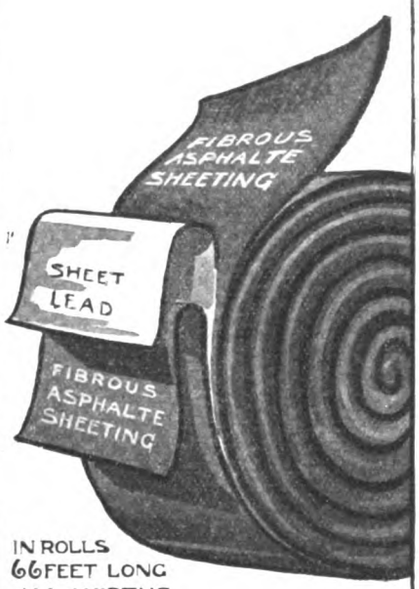
TORRINGTON (DEVON).—For erection of a small detached residence near Torrington Station. Messrs. Smyth-Richards, Stapleton & Fox, Architects, Bridge Chambers, Bideford.

TREDEGAR.—March 15.—For erection of a caretaker's lodge at the new cemetery, Celn Golen, for the Tredegar Urban District Council. Mr. W. Lloyd Roach, surveyor to the Council, Bedwellty House, Tredegar.

WALES.—Feb. 10.—For repairs to twelve houses at Nantyffyllon, Maesteg, for Mr. John Lewis, late of Brigam Farm. Deposit 10s. Mr. W. Bevan, architect and surveyor, Bridgend.

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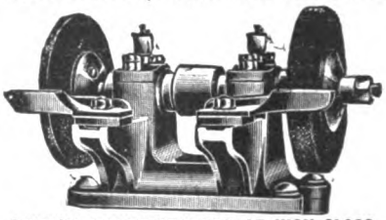
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WADDON.—Feb. 12.—For extension of buildings at Waddon Waterworks, for the Croydon Borough Council. Deposit £1 1s. The Borough Engineer's Office, Town Hall, Croydon.

WALES.—Feb. 15.—For erection and building of a filter house at the "Heath" filter beds, near Cardiff, for the Corporation. Deposit £2 2s. Mr. C. H. Priestley, M.I.C.E., waterworks engineer, City Hall, Cardiff.

WALES.—Feb. 15.—For erection of a boys' school at Hirwain, to accommodate 308 scholars, for the Hirwain Joint Schools Committee. Mr. T. Roderick, architect, Clifton Street, Aberdare. Send £2 2s. deposit to Mr. T. Botting, director of education, Education Offices, Aberdare.

WARRINGTON.—Feb. 16.—For alterations and additions to the sanatorium at Sankey, for the Health Committee. Deposit £2 2s. The Borough Surveyor, Town Hall, Warrington.

WALES.—Feb. 19.—For erection of a secondary school at Ferndale, for the Rhondda Urban District Council. Mr. J. Rees, architect, Hillside Cottage, Pentre. Send £2 2s. deposit to the Accountant, the Council Offices, Pentre.

WALES.—Feb. 20.—For altering the premises of the Old Metropolitan Bank, Cardigan, for Mr. E. S. Watts. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

WALES.—Feb. 23.—For alterations and additions to medical hall, Cardigan, for Mr. H. Morgan. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

TENDERS.

ANGMERING.

For the erection of four cottages at Angmering, Sussex, for the East Preston Rural District Council.

Oliver & Son	£1.060 0 0
Cheeseman	996 0 0
Sandall & Son	995 0 0
Drake & Co.	910 0 0
Ling & Co.	894 0 0
Linfield & Sons	880 0 0
Peskett & Sons	848 0 0
Bowen	830 0 0
Harris	744 0 0
Grevatt	680 0 0

ATHERSTONE.

For the erection of a house for the Master of the Workhouse, for the Board of Guardians. Mr. SIMPSON, architect.

	Revised Tender	Original Tender
R. HOLLAND, Atherstone (*accepted*)	£690 0 0	£775 0 0
Fox	710 0 0	750 0 0
Jennings	707 0 0	775 0 0
Clifford	691 0 0	755 0 0

BIRMINGHAM.

For alterations to the existing first-class and second-class swimming baths at the public bathing establishment, Northwood Street. Mr. W. F. EDWARDS, architect, Birmingham. Quantities by Mr. G. L. Watson, Birmingham.

J. T. HARRIS, Birmingham (*accepted*) £1,968 0 0

EPSOM.

For sewage-disposal works, for the Urban District Council.

Accepted tenders.

Contract No. 1, Roll & Taylor	£2,135 0
Contract No. 2, Meldrum, Ltd.	1,430 0 0
Contract No. 3, Roll & Taylor	7,455 0 0

FERRYHILL.

For the erection of a house, shop, stable, &c., at Ferryhill Village, Durham, for Mr. J. H. Forster. Mr. H. MOORE, architect, Bishop Auckland and Shildon. Quantities by H. MOORE.

Hudson	£1.193 13 8
Todd & Son	940 8 6
Manners	929 10 0
Sowerby	928 6 3
Chapman	866 6 0
Wells	827 18 7
Robson & Garyett	808 11 9

The job is stopped till after the war.

GREENWICH.

For supply of an ash conveyor to the Greenwich Generating Station, for the London County Council.

New Conveyor Co.	£1,567 2 6
Spencer & Co.	1,487 0 0
BABCOCK & WILCOX, LTD., Renfrew (*accepted*)	1,303 13 4
Chief Officer of Tramway's estimate	1,250 0 0

For additions and alterations to coal bunkers and ash hoppers and the erection of additional workshops, stores, &c., at the Greenwich Generating Station, for the London County Council.

J. & C. Bowyer	£14,600 0 0
Wallis & Sons	13,967 0 0
Holland & Hannen	13,888 0 0
Smith & Sons (Norwood), Ltd.	12,990 0 0
Godson & Sons	12,382 0 0
W. Downs, Ltd.	12,176 0 0
CHARLES WALL, LTD., Chelsea (*accepted*)	12,171 10 0
Architect's estimate	13,800 0 0

Note.—For completion of painting in connection with the above the tender of C. Wall, Ltd., £464 5s. 1d. was accepted.

HESWALL.

For the erection of a discharge block at the Pensby Convalescent Home, near Heswall, Cheshire, for the Wirral Joint Hospital Board. Messrs. J. H. DAVIES & SONS, architects, Chester.

JOHN LEE & SONS, Higher Bebbington, near Birkenhead (*accepted*).

LONDON.

For the provision of accommodation for motor lorries at the Leven Road, Poplar, and the Leighton Road, Kentish Town, permanent-way depôts, for the London County Council.

Moss	£2.739 9 11
Hill	2.625 2 11
Coxhead	2.571 5 0
Kensington Developments, Ltd.	2.568 0 0
C. Wall, Ltd.	2,526 0 0
Morris Fenn	2.513 8 5
Coles	2.511 13 6
Marsland & Sons	2,477 0 0
Peppiatt & Cooper	2,446 14 6
Barker	2,445 16 6
Stevens & Sons	2,418 0 0
Cook & Sons	2,416 0 0
Lawrance & Sons	2.314 0 0
Merton Hughes	2,295 0 0
Roberts & Co.	2.280 0 0
Rowley Bros.	2,237 0 0
Kazak	2,235 0 0
Collings	2,234 4 3
Y. J. LOVELL & SON, Gerrards Cross (*accepted*)	2,157 0 0
Architect's estimate	2,360 0 0

Note.—For completion of painting in connection with the above the tender of Y. J. Lovell & Son, £73 13s., was accepted.

For the erection of an additional tramways weather shelter on the Victoria Embankment near Blackfriars Bridge, for the London County Council.

J. & C. Bowyer	£1.189 0 0
C. Wall, Ltd.	1,150 0 0
A. ROBERTS & CO., LTD., Kensington (*accepted*)	962 0 0
Architect's estimate	900 0 0

Note.—For the completion of the painting in connection with the above the tender of A. Roberts & Co., Ltd., £30, was accepted.

For paving works at Nos. 28 to 32 Abingdon Street and on east side of Smith Square, for the London County Council.

H. Farrow	£4,923 14 3
Limmer Asphalte Paving Co.	4,590 3 9
Acme Flooring and Paving Co. (1914), Ltd.	4,422 5 6
Val de Travers Asphalte Paving Co.	4,357 8 1
Improved Wood Pavement Co.	4,257 18 11
Griffiths & Co.	4,192 0 8
Anderson	4,151 18 6
J. MOWLEM & CO., LTD., Westminster, S.W. (*accepted*)	4,027 0 0
Chief engineer's estimate	3,865 5 11

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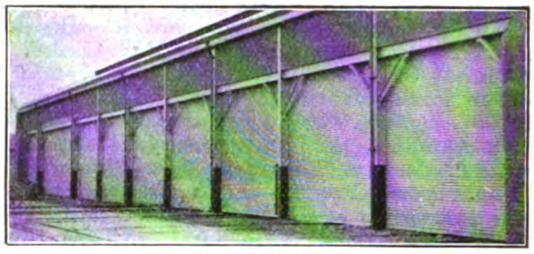
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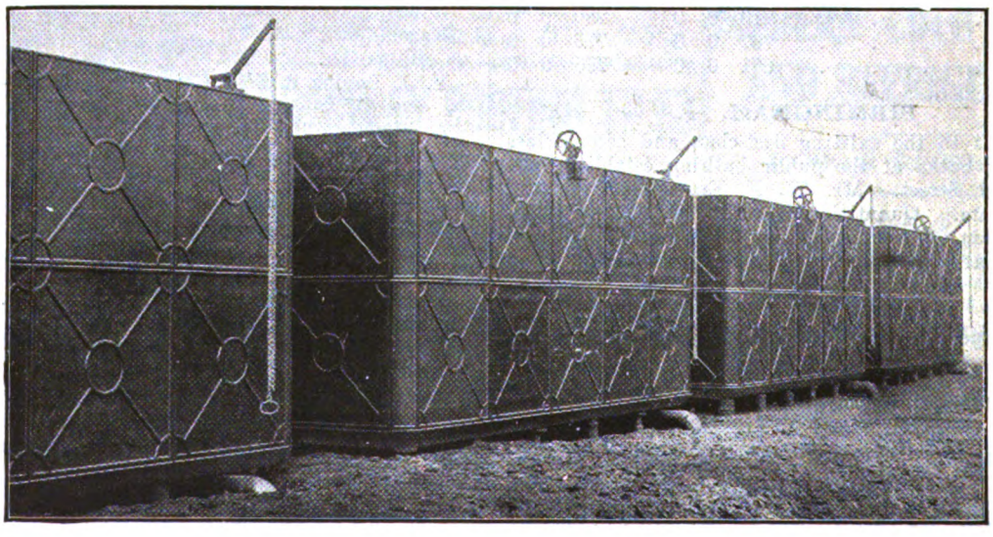
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LONDON—*continued.*

For paving and other works in connection with the Tredegar Road Bridge reconstruction, for the London County Council.

Perry & Co. (Bow), Ltd.	£6,637	0	0
Coles	6,157	0	0
Fasey & Son	5,963	15	6
W. MUIRHEAD & Co., LTD., Westminster, S.W. (*accepted*)	5,671	18	0
Chief Engineer's estimate	5,800	0	0

For the painting work in connection with the erection of seventy-nine cottages on Section C of the White Hart Lane Estate, for the London County Council.

Fairhead & Son	£600	0	0
Wilmott & Sons	566	0	0
Monk	558	10	0
H. Nicholls, Ltd.	550	10	0
ROWLEY BROS., Wood Green (*accepted*)	513	0	0
Architect's estimate	575	0	0

SCOTLAND.

For carrying out alterations at the Old Corn Exchange, Grassmarket, for the Edinburgh City Council. Mr. J. A. WILLIAMSON, A.R.I.B.A., architect, Edinburgh. Quantities by BOYCE M. FRASER, F.I.S., 78 Queen Street, Edinburgh.

Accepted tenders.

JAMES DUNCAN & SON, 127 Grove Street, Edinburgh	£1,478	0	0
Charles Ritchie & Co.,* Aldine Works, Torphichen Street	£1,263	0	0

* Heating installation.

WADDON.

For the supply of a second engine and pump to the new well at Waddon, for the Croydon Corporation.

Galloways	£7,997	0	0
Simpson & Co.	6,300	0	0
Stott & Co.	6,200	0	0
Glenfield & Kennedy	6,200	0	0
ASHTON, FROST & Co., Blackburn (*accepted*)	5,365	0	0

WOLSTANTON.

For the erection of Council offices, for the Urban District Council.

G. H. Davenport	£7,259	0	0
Wilton	7,196	0	0
Grant & Sons	7,100	0	0
Grant	6,900	0	0
Finney & Broadhurst	6,800	0	0
Cooke	6,714	0	0
Rodgers	6,600	0	0
Smith & Son	6,550	0	0
Pemberton	6,318	0	0

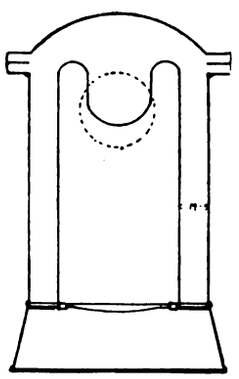
NEW CATALOGUES.

As the inventors and original manufacturers of building, partition and fixing blocks for walls, floors, and tile hanging, Messrs. J. Wright & Co., of New Malden, are in an especially strong position when it comes to carrying out large or complicated orders. Thus they have recently supplied on a War Office contract 23,000 yards super. of their 3-inch partition blocks for external use in the erection of married quarters. The number of Government jobs for which they have been specified must be almost legion. Among recent ones are Buckingham Palace, Marlborough House, Tower of London, British Museum, Sandhurst College, G.P.O., and the Aldershot Royal Pavilion. At the other end of the scale, perhaps, are such jobs as the Merthyr housing scheme or that at Drogheda. Messrs. J. Wright & Co. claim to sell the lightest and strongest partitions on the market. They are made with the best English Portland cement, together with a special aggregate (not coke breeze). A convincing demonstration of their fire-resisting qualities occurred during the great conflagration at Arding & Hobbs' premises in Clapham Junction four years ago, when the partition blocks remained practically undamaged. They economise in three all-important directions—time, space, and cost. Messrs. Wright & Co., who have been established over a quarter of a century, inform us they keep a large and well-seasoned stock always in hand at their New Malden yards.

THE "Kalor" coke-fired domestic boiler is described in a four-page leaflet which has reached us from Messrs. R. Jenkins & Co., Rotherham. It is, we are told, designed to stand in a kitchen, and forms an excellent adjunct to the gas cooker, enabling the householder to do without the coal-fired range. The top is arranged so that it may be used for warming. It is calculated that No. 1 size, the smallest, would cost in working about 4*d.* per day, with coke at 20*s.* per ton, giving twenty-six gallons of water per hour at 130 degrees. No. 5 size would give 100 gallons per hour at the same temperature. The boiler is provided with large mudholes and covers for cleaning. Every boiler holds sufficient fuel to enable it to keep alight all night. Another variety of the "Kalor" is fitted with a copper interior for cases when the Bower Barff process is insufficient to give clear water.

VERITYS, LTD., have issued a second edition of their electric-light fixtures catalogue-de-luxe, numbered Volume III. in the new series. It is prefaced by an important "War Notice," in the course of which it is explained that as manufacturers they have been affected but slightly by the war, as, except for the glass, they make their fittings, almost without exception, at Aston. Emphasis is also laid on the fact that the French brackets and electroliers are modelled on examples from Fontainebleau, Versailles, and the Petit Trianon, collected by the firm during the past ninety years, and worked up by specially trained Englishmen. That these are very beautiful goes without saying. But fortunately that quality is not the monopoly of any one period. Some of the present-day designs here illustrated, even though less sumptuous, are no less good to look upon, and are attractive for their practicability no less than for workmanship and design. This All-British firm are, indeed, particularly proud of their success in special design work. Volume III. consists of more than 500 pages, divided into eighteen sections.

THE B.S. Engineering Company, 4 Lloyd's Avenue, E.C., have sent us a leaflet illustrating their "Baseco" domestic hot-water boiler, about which we wrote recently. The accompanying diagram shows the deep projecting pocket formed at the top of the boiler and dipping down to the fire, which constitutes a most important feature of the design, for it affords an extra heating surface without



SECTION.

increasing the diameter. Another noteworthy point about the "Baseco" is that the entire dome top can be taken off whenever it becomes desirable to clean out the interior: this must obviously permit of a very thorough removal of all incrustation. The boiler is sold in several sizes, the favourites being 14-inch, 16-inch, and 20-inch diameter.

MESSRS. THOMAS CRAPPER & Co., LTD., 120 King's Road, Chelsea, S.W., point out in their latest catalogue of sanitary appliances that they are exceptionally advantaged in having their warehouses, showrooms, works, and foundry all in close proximity to each other. They are also enabled to offer the service of skilled workmen for repairs to closets, baths, water fittings, &c. The catalogue includes, besides the customary goods, such things as drain-cleansing apparatus, iron gratings, pumps, gullies, geysers, boilers, &c.

FROM Mr. J. Attwood, Station Works, Stourbridge, we have received a businesslike illustrated price-list of hot-water pipes and fittings, with sockets for caulking. The prices are given of the 2-, 3-, 4-, 5-, and 6-inch sizes in most cases. For round rain-water pipes, elbows, and tees a larger range of sizes is quoted, as also for soil pipes and fittings with caulking sockets. It may not be out of place

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to mention that Mr. J. Attwood is a maker of heating apparatus, anvils, tools, pumps, and much else. Schemes are prepared and estimates given for supplying and erecting effective and economical heating apparatus in buildings of every description.

CATALOGUE "G," of the sanitary appliances manufactured by Shanks & Co., Ltd., Barrhead, Scotland, is on a scale suited to the importance of the firm. Its seven most important divisions are neatly indicated by projecting tags, which enable the particular section desired to be turned up in a moment. The two first, and the two longest, are those dealing with baths and lavatories respectively. We believe we are correct in noting as a new development the illustration of a mahogany dressing table and chair designed to match the lavatory (likewise on a mahogany inlaid stand), shown on an opposite page. Of course Messrs. Shanks have long been supplying the multitudinous accessories which have gradually accumulated among the list of necessaries for the complete residence, hotel, or institute. They will be found in profusion, priced and illustrated, in this List No. 195.

MESSRS. GEORGE WRIGHT, LTD., Burton Weir, Rotherham, have issued a booklet showing their "Hobgrates," which will serve as a companion to their similarly arranged "Doggrates" booklet. Almost without exception the designs are taken from actual old models. But science has stepped in to put an end to their old wastefulness of heat and fuel by introducing improvements like coal-saving bottom grates, sloping fire-brick backs, &c. Special notice should be taken of the hints for building-in, which are intended to remove all likelihood of unpleasant smoking. The designs here shown have been wisely chosen, and are in impeccable taste.

VARIETIES.

MR. C. DRUMMOND, of Fleetwood, Lancashire, retired builder and contractor, who died on October 1, has left £30,143, of which net personalty was £17,244.

MR. CHARLES WALL, J.P., aged seventy-three, of Farley, Grays, Essex, of Messrs. Charles Wall, Ltd., builders and contractors, of 4 Lloyd's Avenue, E.C., left estate valued at £53,791 gross, with net personalty £20,618.

MESSRS. C. JENNINGS & Co., timber and glass merchants, of 978 Pennywell Road, Bristol, have just received a consignment of 1,200 cases of glass, which they are prepared to supply at particularly low prices.

MR. SAMUEL WAYLAND KERSHAW, F.S.A., aged seventy-eight, of 17 Dorlcote Road, Wandsworth Common, S.W., for forty years curator of Lambeth Palace Library, a writer on archæological subjects, and former R.I.B.A. Librarian, left estate valued at £23,726.

MR. A. W. SINCLAIR, builder and contractor, of Scarborough, has been elected President of the National Federation of the Building Trade Employers of Great Britain and Ireland. Over 6,000 firms in England and Wales are members.

THE Guardians of the Spalding Union invite designs, with an estimate of the cost, not later than February 27, for a children's home to be erected in Spalding. Public institution appearance, as far as possible, to be avoided. A memorandum can be inspected at the office of Mr. H. S. Maples, clerk, Spalding, at any time by appointment.

AT the forthcoming meeting of the Royal Sanitary Institute on Tuesday, the 9th inst., a discussion will take place on "Tall *versus* Short Men for the Army." It will be opened by Dr. M. S. Pemprey, M.A., M.D., lecturer on physiology at Guy's Hospital, and late member of the Advisory Committee of the Army Medical Service.

MR. J. J. JOASS, F.R.I.B.A., gave a lecture on the 27th ult. before the Glasgow Institute of Architects, entitled "The Work of the late John Belcher, R.A." A report of this paper when delivered at the Royal Institute of British Architects appeared in our issue of December 18.

COUNT G. N. PLUNKETT, H.A.R.I.B.A., has been re-elected President of the Royal Society of Antiquaries of Ireland; Mr. J. Franklin Fuller, F.R.I.B.A., has been elected a Fellow of the Society; and Mr. P. J. Lynch, F.R.I.A.I., is added to the Council.

THE Civic Museum Sub-committee of the Newcastle-on-Tyne Corporation held their first meeting last week. A scheme is to be prepared at once as to the proposed establishment of a civic museum, the exhibits to include things relating to the history and development of the city; also to social, educational, and industrial growth.

MESSRS. BAKER & FINNEMORE, the old-established pen manufacturers, of Newhall Street, Birmingham, have sent us one of their sample cards of pens made by them. It contains thirty-six sample pens, all of high-class finish. For some time past we have used these pens in these offices, and can testify to the fact that we know of no better pen upon the market. Ask your stationer, when ordering, for the Bak-Fin series of pens.

THE Executive Committee of the Welsh War Hospital at Netley last week decided to double the existing accommodation of 100 beds. There is sufficient money in hand to do this, and also to maintain the 200 beds until the end of the year without making a public appeal. The additional buildings, designed by Messrs. Edwin Hall and E. Stanley Hall, hon. architects of the hospital, will be begun at once.

THE Building Trades Exhibition, fixed to be held at Olympia this spring, will be postponed till 1916. It is not that the trade is unduly depressed, but several firms are now engaged with Government contracts, and many architects, builders and surveyors, and members of their staffs, are absent with his Majesty's forces. There would also be a difficulty in renting Olympia this spring.

THE Edinburgh, Leith and District Building Trades Association held its forty-third annual meeting at 112 George Street, Edinburgh, recently. The Executive Committee hope to issue the conditions of contract and the mode for joiner work by March 1, and the mason mode will shortly follow. Office-bearers for the ensuing year were elected as follows: President, Mr. Edward Bruce; Vice-Presidents, Messrs. James Crowe, David A. Angus, and John Kennedy. An Executive Committee of seventeen members was also elected.

THE Doncaster Corporation have been informed that the expenditure to be incurred in the event of sanction being given this session to the Corporation Bill will be £196,600, exclusive of the cost of passing the Bill through Parliament. The expenditure will be incurred as follows: On street widenings, £50,000; on the construction of a service reservoir at Warmsworth, £16,000; on the erection of municipal buildings, £30,000; on new gasworks, £65,000; and for the erection and equipment of an isolation hospital, £35,600.

FOLLOWING upon a recent deputation from the Woolwich Borough Council to the Local Government Board, drawing attention to the dearth of housing accommodation at Woolwich, owing to the influx of workmen at the Arsenal, the Government have purchased ninety acres of land between Woolwich and Eltham, and the estate is to be laid out as a garden city for Government workmen. The plans provide for blocks of four and six houses, which will be erected in sites 100 ft. deep, leaving ample garden space. About 1,000 houses are to be built, and a portion of the site is to be preserved as an open space. The first 170 houses are to be completed within six months.

THE Newcastle Corporation Trade and Commerce Committee recommended the Council, at their meeting on the 3rd, to construct a new berth on the quayside east of the Ouseburn by extending the quay 330 ft., erecting siding, &c., at a cost of £51,100. The amount is made up as follows: Quay wall, 330 ft. in length, and giving an ultimate depth of water of 25 ft. at L.W.O.S.T., levelling site, and dredging, £27,500; railway and sidings, £3,600; paving, £3,900; shed, £8,400; drainage, lighting, and diversion of mains, £1,350; crane, £1,700; contingencies at 10 per cent., say, £4,650.

THE Executive Committee of Liverpool Cathedral, at their last meeting, received the report of the treasurers on the accounts for 1914. It was explained that after taking into account the recent rises in wages and cost of materials, further contributions to the extent of £44,466 would be necessary to complete the portion of the cathedral now in course of construction. At the rate of progress in force before the war the chancel and first transept would have been ready for consecration in two and a half years from now. Though the withdrawal from the works of men of serviceable age means some delay, the Committee still hope that this event may be so little postponed that it will be recognised as one of the methods in which the diocese may celebrate the conclusion of a glorious peace. A hope was expressed that both the inhabitants of the diocese of Liverpool and visitors would not fail to examine the noble exterior of the building from Hope Street and Upper Parliament Street, whence the view is particularly impressive.

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THE ARCHITECT

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FORTHCOMING EVENTS

Monday, February 15.

Royal Institute of British Architects : Paper entitled "Architectural Sculpture in Spain," by Mr. Andrew N. Prentice, F.R.I.B.A., at 8 P.M.

Royal Academy : Lectures on Architecture, (1) "The Romanesque and Gothic Arts of the Low Countries," by Professor E. S. Prior, M.A., A.R.A., at 4 P.M.

Tuesday, February 16.

Professional Classes War Relief Council : Public meeting at the Mansion House at 4 P.M.

Illuminating Engineering Society : Discussion on "The Development and Design of Lighting Fixtures in Relation to Architecture and Interior Decorations," to be opened by Mr. F. W. Thorpe, at 8 P.M.

Wednesday, February 17.

Royal Academy : Lectures on Architecture, (2) "Architecture in Flanders and Brabant, A.D. 1400 to 1800," by Professor E. S. Prior, M.A., A.R.A., at 4 P.M.

Carpenters' Hall : Paper entitled "Animal Forms in Art," by Mr. Charles Aitken, at 7.45 P.M.

Thursday, February 18.

Concrete Institute : Paper entitled "Economy : Reinforced Concrete Construction," by Mr. T. A. Watson, A.M.I.C.E., at 7.30 P.M.

COMPETITION DESIGNS FOR NEW BOARD OF TRADE OFFICES.

In its result the competition for the new Board of Trade Offices reminds us of that of the London County Council building. Once again we see the victory of economical planning over clever attempts at Architecture with a capital A. As is usually the case the most simple and obvious-looking plan, when achieved, is the winner. In conformity with the invariable English custom, the site for the building is far too exiguous to permit of any display of fine planning such as we see in the academic designs of architectural students in the Ecole des Beaux-Arts, or even as is possible in actual buildings on the Continent of Europe or that of America. By rigid economy of space and clever, or at least infinitely painstaking, planning, the site provided has been proved to be sufficient, but no more than sufficient, for the accommodation required to be provided. At least we must assume that the said accommodation has been required, though in default of a copy of the revised conditions issued for the second and final stage of the competition we have to make the deduction from the fact that the plan of the winner has been accepted.

As in all buildings which consist of a multiplicity of offices, the architect engaged on their design has for his first problem to decide whether he will put rooms on both sides or on one side only of his corridors. When, as in this case, the site is restricted in area, direct-lighted corridors entail many lighting courts, and thus in some of the designs adopting this method, those courts are but twenty feet wide and a hundred and twenty deep, regular shafts the light obtained from which on the lower floors is poor in the extreme.

In the winning design Mr. E. Vincent Harris has adopted throughout, it will be seen from the plans that we publish, the system of central corridor with rooms on both sides. The staircases are sufficiently numerous in number, but in no way marked by extravagance for the sake of internal architectural effect. By this economy and the universal adoption of a room-depth of 22 feet, the author has been able to squeeze in all the accommodation in the surround of one great internal courtyard, for the ceremonial passage on the ground floor may be taken as purely adopted for the sake of access to the "historic rooms" of the existing buildings and so quite extraneous to the general plan. It will be noted that as many of the rooms were specified to be of quite small areas, 150 feet super in some cases, the universal depth of 22 feet results in a width of 8 feet only, a proportion which, if not exactly beautiful, may be regarded as a practical one for a single individual's work-room. The treatment of the re-entering angles of the plan is decidedly clever.

Our illustrations of the principal elevations and the perspective show that Mr. Vincent Harris's design bears the same marks of business-like simplicity that characterise his plan. There is no straining after effect by the introduction of features. We have presented to us a clerical factory or workshop, not a magnificent piece of architecture. By its bulk the new office building of the Board of Trade will be impressive, by its simplicity it will be dignified.

In dealing with the external treatment of a huge workshop with many small rooms and some large ones, with a basement and ten other floors above, competing architects had a knotty problem to solve in avoiding a barrack-like effect on the one hand, or on the other of making their office building appear like a big hotel. Some of the designs submitted give two floors above the ground line to a qua-basement, reducing the number of floors between this and the main entablature to three and putting a fourth into the frieze, a fifth into an attic, and the two remaining floors into the roof. Others of the designs show variations, more or less divergent, on this division of storeys. It will be noticed from our illustrations that Mr. Harris boldly includes six floors between his qua-basement and main cornice, whereby he obtains a great accession of dignity. The wearisome monotony that might have resulted is obviated by the device of grouping two upper storeys together by means of an order of pilasters and balcony. Thus there is produced a well-proportioned and finely balanced composition of the façades.

The authorship of the remaining nine designs is concealed, and although it is not difficult to penetrate the disguise, the desired respect for anonymity shall be duly regarded by us, and we will refer to the unsuccessful competitors by numbers only.

No. 177 follows the outline of the site fully, and so has a rather irregular and unsymmetrical plan. As side-lighted corridors are adopted, there are numerous internal courts of small width, and the main internal area is cut into four by a central block in Greek cross form and by projections off the main corridors. The author has also planned some very fine internal effects, with grand entrance halls and staircases. He has, in fact, attempted with much ingenuity to obtain qualities of plan for which the area of the site does not satisfactorily suffice. The external treatment is also of excellent quality, with a modern French type of detail.

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No. 113 modifies the site into a trapezium form, with parallel east and west sides. A compromise is made in the matter of corridor lighting: those on the east and west have side-light, those in the north and south blocks have rooms on both sides. These necessitate internal lighting areas and a central block. The exterior is treated with severity, two rusticated lower storeys and rusticated end pavilions. The deep frieze with windows is adopted in this design. The detail is modern Neo-Grec.

No. 64 has a good central court, but also for the sake of side light to corridors has included lighting areas 20 feet wide and 120 feet high. The exterior is one of those with the grouping of two rusticated lower floors, one in the frieze, one in an attic, and two in the roof. The end pavilions of the façade are marred in their effect by unhappy proportions.

No. 93 presents a distracting-looking plan from a multiplicity of axial lines, which, though more disturbing on paper than they would be in actuality, result in a number of rooms of irregular shape. The internal area is divided into two "main" courts and two other courts which are not main, and all the corridors are side-lighted but one. Effect in the façades is sought by the use of end pavilions of rather disjointed composition, in which semi-circular arches on Ionic columns are framed by rusticated piers. The detail is of the rare type—in this competition—of twentieth-century English Renaissance.

No. 172 shows a plan which is the result of an idea. The site is of somewhat irregular form, as is common in English public buildings, and the author of this design has regulated it by radiating his whole building from a distant point in the south. The east and west blocks are on radii from this centre, the north and south are segments of circles struck therefrom. Corridors of both manners of lighting are used, and the plan, naturally, is symmetrical and is well disposed around the large central courtyard. The façades lack repose and centrality; their features appear to have no relationship either to the plan or to each other in their grouping. A fine monumental effect is, however, produced by the setting back in stages of three storeys above the main cornice.

No. 94, although adopting the corridor with rooms on both sides, has found it necessary to introduce a central block, dividing the internal area into two courts. The elevations are expressive of steel-frame construction and attain distinction by the use of pilasters, or piers rather, running through three storeys. The external design, both in composition and detail, may indeed be summarised as in Kingsway fashion.

No. 154 also has a plan with two courts and a central block, but is able to indulge in some side-lighted corridors. The exterior is in the fashionable Anglo-French type of Neo-Grec, but the façades are spoilt by the unnecessary additions of dressings to alternate windows in the triple tiers of storeys between basement and entablature.

No. 10 again shows a similar plan in main essentials to the preceding two, but here the longer corridors, those on the east and west, rejoice in side light. The exterior is rather hotel-like in feeling, with a central façade-feature of a colonnaded loggia running through the first, second, and third floors. The detail is of the modern Italianised Greek type.

No. 7 has achieved a single internal court except on the ground and lower floors, with a continuation on the first floor of diminished area and section. The re-entering angles are in this case occupied by long-octagon rooms instead of the usual staircase device of getting over this trouble of the central corridor arrangement. The elevation is dignified and refined.

It will be seen that the ten designs selected out of the original 187 are of very varied type, both in plan and external treatment, and although we have in our review emphasised rather the weaknesses that have tended to their want of ultimate success, we may, in conclusion, point out that all have excellences in one direction or another, and the whole collection forms an exhibition of the high standard of present-day British architecture, alike in design and draughtsmanship.

The following is the published award of the three assessors:—

"In accordance with your instructions we have carefully considered the ten sets of designs submitted in the final competition for this building. In our opinion alterations of importance would have to be made before any of the designs submitted, including the one we have selected, could be successfully carried into execution. While fully alive to certain defects in the selected design, we consider that these defects can be remedied without materially altering the scheme, and we are unanimously of opinion that No. 5 is on the whole the best, and we therefore recommend that, subject to the conditions of the competition, the author of No. 5 be appointed architect to the new building."

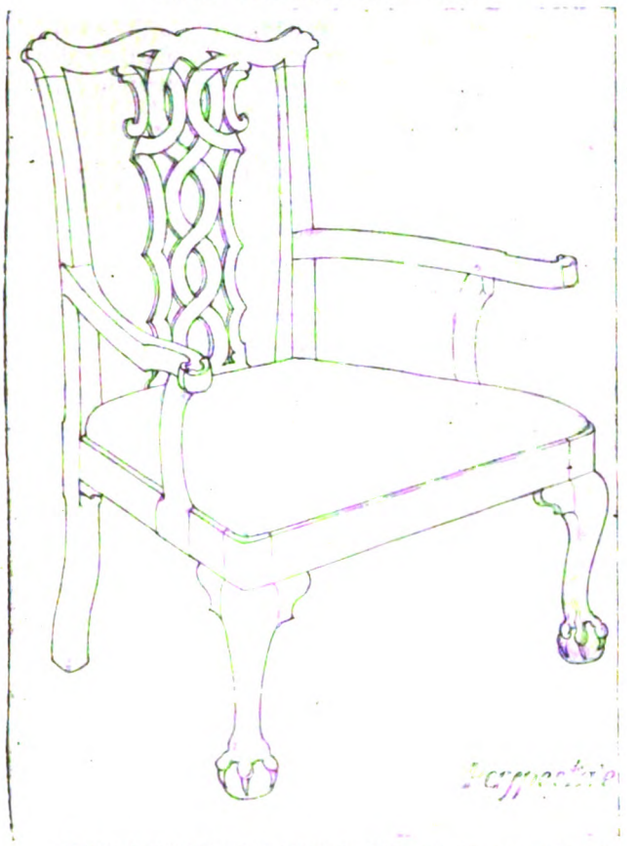
NOTES AND COMMENTS.

The Royal Society of Painters in Water Colours is to be congratulated on the result of the sale at Christie's in aid of the funds of the Red Cross and St. John's Ambulance Societies, when £2,002 3*s*. was realised from the sale of drawings donated by members. The very successful result was due to keen competition amongst the general public. Offers received while the collection was on view recently in the Society's room gave in most cases a good starting price to the drawings, the majority of which went to private buyers, and at considerably higher bids. In the matter of number of purchasers the sale was probably a record in the rooms. A big figure was early reached when £57 15*s*. was paid by Mr. James Murray for a very beautiful drawing, "Powblack," by Mr. D. Y. Cameron, whose "Borlum" fetched £31 10*s*. Mr. C. Napier Hemy's "Oysterman" was bought by Sir William Garth for £40; one of Mr. Albert Goodwin's contributions brought £31 10*s*.; Mr. Charles Sims's, "On the Shore," £28 7*s*.; one of Mr. Tuke's, "Schooners," £25 14*s*.; and one of Sir E. A. Waterlow's, "Stonehaven," £32 11*s*. Most interest, perhaps, was taken in the two drawings by Mr. John Sargent, which together added £480 to the fund; from £75 "Under the Poplars" was run up to £270, at which the Fine Art Society acquired it, and "Karer See," beginning at £100, went to Mr. Konody for £210.

From the *Scotsman* we learn that the Linlithgow Town Council recently sought the advice of Mr. W. T. Oldrieve, Edinburgh, as to the manner in which they should carry out their proposed scheme of improving the Cross Square, and they have now received Mr. Oldrieve's recommendations on the subject. In his letter, Mr. Oldrieve states that the object of the proposed improvements is to provide a more dignified approach to the Palace, at the same time protecting the fountain and the memorial statue to the late Marquis of Linlithgow from damage. The problem would have been less difficult if the Linlithgow statue had not been in close relationship to the fountain, but presumably the question of its removal to another site cannot now be taken into consideration. If it could, he was of opinion that a still further improvement would be possible from an artistic standpoint. The broad principles upon which he had acted were:—(1) That everything in the way of railings, trees, lamp-posts, &c., around the fountain or statue should be cleared away, as such obstacles irritate and intercept the view. (2) That the largest possible area round the fountain and statue should be enclosed by a low curb and laid out with a broad border, with flowers and quite dwarf shrubs, the centre part being turfed and kept close mown so far as possible. (3) That the approach roadway to the Palace should be made with a slight curve so as to give more interest to the approach, at the same time allowing the enclosed garden to be more central in the Square.

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"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB



CHIPPENDALE ARM CHAIR, 1760.—In the possession of G. W. BAIN, Esq., Sunderland.

This chair is built of mahogany and is an exceedingly fine piece of work: the lines and forms of the various members being very fine and graceful.

Measured and drawn on the spot by "IMPROVER."

Mr. Barry Parker, in a lecture to the students of town-planning at Birmingham University, gave some useful hints on house-planning, which are of more than local interest. Dealing with typical house-plans of varied size, he showed how, in every type of house, the actual conditions laid down by the site, by considerations of aspect and prospect, and the specific requirements of the future occupants of the house, must be the controlling factors in its planning. The lecturer also drew attention to the way the hall was again coming to assume a more important place in the house plan, but said that modern architects thought it could be made to do this merely by its being increased in size, whereas it could only usefully do this if it were so arranged that the traffic through it from room to room or from room to stairs, or from these to the front door, was rigidly confined to one corner of this apartment, leaving the rest free from traffic and cold currents of air, and therefore comfortable to sit in.

We have before referred to the excavations and explorations on the interesting site of the ruins of Lesnes Abbey, Kent, and the results of those investigations have now been set forth at a meeting of the British Archæological Association in a lecture by Mr. F. C. Elliston Erwood, who said that the work, which had been undertaken by the Woolwich Antiquarian Society, under the supervision of Mr. A. W. Clapham, has now been completed after four years' labour, and at the cost of several hundred pounds. Having traced the history of the Abbey from the time of its foundation by Richard de Luci, in 1179, to its dissolution in 1524-25, in order to provide means for founding Wolsey's College at Ipswich, the lecturer, by means of lantern views, illustrated the course of the excavations, and pointed out how superior in style and strength was the late twelfth-century work of the Abbey to anything that came after it. During the recent work the whole of the infirmary had been cleared, a rather rare thing in the case of an Augustinian priory. The complete plan of the thirteenth-century chapel, built of knapped flint with Reigate stone facings, was disclosed, as also were the walls to a height of two feet above ground level. A very interesting find was the serving hatch from the kitchen into the refectory, the latter now a cowhouse. The hatch led into a little tunnel, nine inches high by eighteen inches wide, along which the food was pushed to the opening from the refectory, and it was a remarkable illustration of the vandalism that prevailed, even in those days, that the floor of the tunnel was a Purbeck marble slab from the top of a thirteenth-century coffin. The finds also included the coffin slabs of Elyas and Fulk, two of the early abbots, and these, with other relics, were now in Erith parish church.

A letter in the following terms has been forwarded by the Postmaster-General to the principal architectural associations:—

"The Postmaster-General wishes to call attention to the importance of making adequate arrangements in the plans of large buildings for the installation at a later stage of telephone equipment. Failure to do so leads to complaints owing to the inevitable interference with the structure and decorations of the buildings and the noise caused by piercing walls and floors. It also delays the installation of the telephone and increases the costliness of the work involved.

"In these circumstances it is to the advantage of all concerned to make adequate provision for telephone, as well as for light, water, and other services, in designing a building, and it has occurred to the Postmaster-General that members of the association may be glad to have some information as regards the accommodation required for this purpose.

"For the telephone service of a large building provision should be made, as a minimum, for one 3-inch pipe from the public footway to the basement or ground floor and for cables to the other floors. It is also desirable that there should be a ready means of leading wires to the various rooms on the different floors. The precise requirements vary according to circumstances, but they can be definitely ascertained in any particular instance from the local Post Office engineer, whose address may be obtained at the nearest telegraph office."

WAR ITEMS.

IN connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or market have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and lists are prepared and circulated of articles which inquirers desire (*a*) to purchase, and (*b*) to sell. The eighth list is now ready and may be obtained by United Kingdom manufacturers and traders.

British firms interested in any of the goods mentioned, either as buyers or sellers, should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

A PROCLAMATION has been published in the "London Gazette" extending the Copyright Act to literary, dramatic, musical, and artistic works of authors who are citizens of the United States of America, the Government of America having undertaken to grant similar protection of works of British subjects.

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FIRE PRECAUTIONS AND THE WAR EMERGENCY.

THE British Fire Prevention Committee's special organisation to meet the war emergency completed its first half-year's work this week. The work comprised mainly an extensive issue of fire warnings; the formation of a technical inquiry office to deal with all manner of technical inquiries; the formation of a special fire survey force of eighty honorary fire surveyors entrusted with special duties; and the formation of a special fire service force of three hundred fire brigade officers and men available for mobilisation at short notice.

No less than 105,500 "fire warnings" in the form of small posters have been issued by the British Fire Prevention Committee and distributed either directly or through the Government Departments and other public authorities concerned. Such "warnings" were specially prepared for military hospitals and refugee hostels (translations in French and Flemish also being made available for Belgian wounded and Belgian refugees). There were "fire warnings" for farmers as to grain storage, for troops billeted, and for factories engaged on Government supplies.

In many cases trade associations were accorded facilities for reproducing the warnings for use among their own members and subscribers, whilst no less than four hundred daily newspapers and technical journals have reproduced the warnings in part or whole.

The Technical Inquiry Office has dealt with many hundreds of cases, some of considerable complication. The Fire Survey Force has dealt with some two hundred surveys, and such surveys have occasionally required the inspection of as many as fifty individual buildings. Several patrols have already been requisitioned from the Fire Service Force.

The whole of the services provided by the British Fire Prevention Committee as far as the professional men assisting are concerned have been rendered gratuitously, the paid staff being limited to a small clerical staff at the headquarters at 8 Waterloo Place, London, S.W.

Over 200,000 postal items have had to be dealt with, and the districts covered include not only Great Britain and Ireland, but the various stations in the Mediterranean and Egyptian Protectorate.

COMPETITION NEWS.

DONCASTER.—At a meeting of the Sewage Disposal Committee previous recommendations as to the proposed sewerage and sewage disposal scheme for the borough were considered. It was moved and seconded that Messrs. Mansergh be asked to amend their scheme to suit the altered circumstances and the views of the Corporation. An amendment was carried, however, by eight votes to two, that a sewerage and sewage disposal scheme be invited by competition, and that prizes be offered as follows, £300, £200, and £100, it being one of the conditions that the prize money of the successful competitor employed to carry out the work shall merge in his commission, which is fixed at 7½ per cent., including the taking out of quantities and all disbursements. It was also decided that an assessor be engaged at a fee of £300. These recommendations were approved by the Council in Committee on January 25.

GLASGOW.—At the last meeting of the District Board of Control a proposal to erect additional buildings to accommodate 300 patients at Gartloch Asylum, with attendants' houses, was discussed, and it was agreed to obtain the plans by competition.

MANCHESTER.—The East Lancashire Masonic Benevolent Association has been informed that in connection with the scheme for the building of a new masonic hall in Bridge Street, twenty-nine architects had sent in provisional plans, from which eight had been selected. A sub-committee of members of the Order who were architects had assisted the assessor, Mr. Walter Higginbottom, F.R.I.B.A., and three plans had been chosen from which a final selection would be made.

PAISLEY.—Mr. John Watson, President of the Glasgow Institute of Architects, who was appointed by the Paisley Burgh School Board as assessor of the competitive plans for the alterations necessary to adapt the Globe Hotel as a meeting place and offices for the Board, recently submitted his report. The architects are Mr. James Carruthers, I.A., Glasgow, who has been appointed to carry out the work; Mr. William Brown, jun., Paisley, who receives a premium of £10; and Mr. Matthew Adam, Glasgow, who receives a premium of £5.

ILLUSTRATIONS.

ACCEPTED DESIGN FOR THE NEW BOARD OF TRADE OFFICES.

A REVIEW of the design of Mr. E. Vincent Harris will be found in a leading article on the competition for the new Board of Trade Offices.

WESTMINSTER HOUSE, MILLBANK.

THIS new building, at the corner of Dean Stanley Street and Millbank, Westminster, S.W., has been erected for the British-American Tobacco Co., Ltd. There is a frontage of about 134 feet to Dean Stanley Street and about 104 feet to Millbank. Messrs. Holland and Hannen & Cubitt, Ltd., were the contractors, and Messrs. Gordon & Gunton the architects. The structure has been erected under the Steel Frame Act, and is entirely supported on steel girders and stanchions, which are encased and protected throughout with concrete, the contractors for the steelwork being Messrs. the Aston Construction Co., Ltd. The building consists of seven floors and the basement, and the height is carried to the extreme limit allowed by the London Building Act—80 feet from pavement level to eaves—with two storeys in the roof above and towers at the three corners. The floors throughout are formed with reinforced concrete and tile construction. Some of the girders supporting these floors are of exceptional span—over 40 feet. This gives a clear floor space without any columns or other obstructions. The retaining wall on both fronts, with the vaults at the back of same, have been executed in reinforced concrete, like the large strong room in the basement. The whole building is heated with atmospheric steam, and there is a system of mechanical ventilation to several of the lower floors. An artesian well has been provided, and the water supply therefrom has been ascertained to produce about 4,000 gallons per hour. This is stored in large tanks, chiefly in the basement, which have a capacity of more than 25,000 gallons. The frontages to Millbank and Dean Stanley Street are faced entirely with Portland stone, with the exception of a plinth at the pavement level, which is in polished Aberdeen granite. The roof is covered with Westmoreland green slates, and the dormers are covered with copper.

The sub-contractors were as follows: Steelwork, Aston Construction Co., Ltd., New North Road, N.; stonework, F. J. Barnes, Portland Stone Quarries, Portland; granite, J. Fyfe & Co., Aberdeen; marble, Farmer & Brindley, Ltd., Westminster Bridge Road, S.E.; electric lifts, Waygood-Otis, Ltd., Falmouth Road, S.E.; drainage work, sanitary plumbing, sanitary fittings, marble work in lavatories and cold-water supply, Davis & Bennett, Horseferry Road, S.W.; electric light, bells, &c., Ellis & Ward, Ltd., Queen Victoria Street, E.C.; artificial stone stairs, Stuarts Granolithic Co., Ltd., Bedford Row, W.C.; slating, A. W. Allard & Co., Clapham Junction, S.W.; lantern lights, British Challenge Glazing Co., Tooley Street, S.E.; area light and pavement lights, British Luxfer Prism Syndicate, Finsbury, E.C.; wood block flooring, Acme Wood Block Flooring Co., Gainsborough Road, N.E.; ironmongery, W. & R. Leggott, Ltd., High Holborn, W.C.; strong room doors, Milner's Safe Co., Ltd., Finsbury Pavement, E.C.; floor lights, J. A. King & Co., Queen Victoria Street, E.C.; asphalte, Claridge's Asphalte Co., Central Buildings, Westminster, S.W.; ornamental ironwork, W. T. Allen & Co., Queen Victoria Street, E.C.; desks, Shannon, Ltd., Ropemaker Street, E.C.; ferro-concrete, Considere Construction Co., Ltd., Victoria Street, S.W.; iron sashes and lead lights, W. James & Co., Willesden, N.W.; door springs, Smith & Turner, Bartholomew Close, E.C.; carving, Gilbert Searle & Sons, George Street, S.E.; heating and ventilation, J. Jeffreys & Co., Westminster, S.W.; artesian well, A. Williams & Co., Old Ford Road, Bow, E.; flagstaffs, J. Piggott & Co., Bishopsgate, E.C.; vacuum cleaner, Sturtevant Engineering Co., 147 Queen Victoria Street, London; lockers and steel fittings, Crittall Manufacturing Co., Braintree, Essex; Chubb's Safe Co., Queen Victoria Street, E.C.; and Estler Bros., South Molton Road, Victoria Docks, E.; wood fittings, Waring & Gillow, Ltd., Oxford Street, W.; blinds, Alfred Shingleton, Kensington, S.W.

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THE PRINCIPLES OF GARDEN CITIES AND THEIR APPLICATION TO BELGIUM.*

By MR. EWART G. CULPIN.

ONE of the lessons which have been most insistently impressed upon civilised communities in the last decade is that which is the result of the more intensive civic and sociological study which has taken place of recent years, and is the application to the affairs of everyday life of those principles of science which have resulted in so much advancement in all fields of commerce and invention. The expert has discovered that, without doubt, the great cities are not productive of healthy life, and that universally they are dependent upon the small towns and the countryside for their revivification. An examination into the origin of the men undergoing the greatest fatigue or those trades where physical endurance is most necessary, will show that these are recruited mainly from the countryside.

Fifty years ago when the stress of modern development was not so insistently felt, and before the world had become accustomed to the rush of life which modern commerce necessitates, and while our towns were still comparatively small and the fresh air had comparatively easy access, the question was not such a serious one, because there were ample reserves to draw upon for replenishing the stock of town life. But now from every quarter of the world we hear the same cry, and our country—England—has become a race of town dwellers. Even in the new countries of the world, such as America, where fifty years ago only 3 per cent. of the population lived in towns, the proportion is now about 50 per cent., and is rapidly increasing, so that even there, with the vast resources of open agricultural land, the proportion of agricultural population is steadily decreasing. And in the rapid development of our towns consequent upon industrial expansion there have arisen conditions which have tended more to the destruction of life and to the creation of inconvenience rather than to betterment.

Before the days of adequate sanitary control houses were built and streets were made with no regard to the real needs of the population and without consideration of public convenience, while the question of beauty—the preservation of natural beauty or the securing of architectural beauty in development—was quite unthought of. In course of time this led everywhere to congestion, to overcrowding, to slums, resulting in a population with a distinctly lower standard of health, physique, morale, and mentality. Wherever we look we find that vital statistics prove the slum to be the deadly enemy of health; that even where no actual slum exists overcrowding increases death and sickness rates and predisposes the inhabitants to certain diseases. The criminal statistics show the same thing. Lunacy experts declare that the increase in these crowded quarters is nearly ten times as great as elsewhere, while we all know from our own experience that these conditions produce a lack of self-control and a predisposition for vice and violence. The child born among such conditions is, indeed, predisposed to an evil course of life.

With such a chain of circumstances forced upon our consciousness it became necessary to discover if there was not a remedy. Various men in various countries have suggested one remedy after another. Legislation for control of the use of the land, laws for the building of certain types of property, and ideas of all sorts as to the provision of an ideal city have sprung up regularly. From the time of the ancient prophets there has been a vision of a city of health and happiness, but the vision has not been realised. And none of the model communities founded in different parts of the world, most of them with a religious basis, have proved successful. What was required was a community which, although not naturally created, should be created in accordance with the laws of natural growth, and instead of aiming to provide for a particular type of individual or a perfect type of individual, should provide for an ordinary normal population.

That solution has been found in the Garden City, whose principles were first proclaimed seventeen years ago by Mr. Ebenezer Howard in a book entitled "Garden Cities of To-morrow." Never, perhaps, in the history of the world has a new idea been so quickly received, adapted, and assimilated as has the idea of the Garden City, and although in many of its developments the original idea has been lost sight of, and some communities have been founded under the title of "Garden Cities" which are only a mockery of that name, yet it has been found, wherever the principles have been put into practice, that it has been good not only for the individual but for the community as a whole. And this is the idea which runs throughout the whole principle of Garden Cities and Suburbs, and also Town Planning—that we must seek to work for the good of the community, and that lasting benefit to the individual can only come as the community is benefited. The foundation principle is co-operation. It is only by co-operation that the great experiment of the Garden City has been built up, and that the fifty or so examples of Garden Suburbs in England have come into being; it is only by co-operation that it is possible for town planning to be put into practice, and it will be only by co-operation that the vast question of the reconstruction of Belgium can be carried out in a manner worthy of her history and traditions.

In the old days, when the beautiful cities of Flanders grew into being, men strove together in the arts of peace and vied to produce buildings individually pleasing to the eye and collectively forming a picture of grace and beauty which has ever since attracted the student from all parts of the world; but in these days, and especially the days we are looking forward to when rebuilding begins, it is terrible to think of what would be the effect of each owner of each site erecting his own house according to his own ideas and without relation either to its neighbours or to the street in which it was placed. We in England have many painful examples of what that has produced, but we are beginning now to have examples of what co-operation can secure, and it is to the meaning of this that our attention is now directed.

In the first place, we must understand clearly the meaning of the terms we are employing. The Garden City movement in Great Britain has been initiated and carried on entirely by companies and societies acting as societies of public utility, with a limited dividend on their share capital. The whole movement, both here and elsewhere in the world, has grown out of the Association formed to examine Mr. Howard's proposals and known as "The Garden Cities and Town Planning Association." This in its turn led to the formation of the International Garden Cities and Town Planning Association, linking up the various bodies throughout the world which were founded with similar objects.

It may be well to set out at the beginning the essentials of a Garden City as distinguished from a Garden Suburb, and from ordinary development. These may be stated as follows:—

1. That before a sod is cut or a brick is laid the town must, in its broad outlines, be properly planned with an eye to the convenience of the community as a whole, the preservation of natural beauties, the securing of the utmost degree of healthfulness, the proper regard to communication with the surrounding district.

2. That in the town area the number of houses to each acre should be strictly limited, so that every dwelling should have ample light and air, with a suitable garden, and that public recreation ground and open space should be provided generously.

3. That the town area should for ever be surrounded by a belt of agricultural and park land, so that while in the centre the urban problem is being dealt with, the rural portion, which should be the larger part of the estate, may be available for farms and small holdings, in order that the small holder and market gardener may have a new market direct to hand for the sale of produce.

4. That the return on capital should be limited to, say, 5 per cent., any profit above that amount being applied to the estate itself for the benefit of the community.

That in order to adjust the claims of the shareholders in the promoting company and the residents on the estate, the return on capital should be limited to, say, 5 per cent. The land being let on leasehold tenure, the main source of income would be ground rents, whose increasing value would be secured by the activities of the tenants themselves. In order that the inhabitants may benefit from the increment of value resulting from their labour, all profit over 5 per cent. should be applied to the estate itself for the benefit of the community. The conversion of rural into urban land will result in such increment that, properly started, the progress of the estate is certain until the accruing increment makes it possible for the town itself to assume control of the land.

* An address delivered on Thursday afternoon, February 11, at the Guildhall, before the International Conference on the Rebuilding of Belgium.

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5. That the town should be not merely residential, but also commercial and industrial, that provision should exist for taking the worker and his work away from the crowded centres into the fresh air of the country district, where not only should the land be cheaply obtainable for the employer, but the worker should have a comfortable cottage at a convenient distance from his labour.

It is therefore essential that the land should be of considerable area, and its development should be in the hands of one controlling body, which, in Mr. Howard's scheme, should have for its ultimate object not the making of huge profits, but the improvement of the conditions of life for all who live on the area. The estate should be somewhere from six to ten square miles in area, and in order to give effect to the desire for the combination of town and country, about two-thirds should be reserved for the rural area.

The question of the manufacturer is perhaps the most important of all in considering the full Garden City scheme, because although land may be cheaply acquired away from the great towns and houses may be cheaply built, unless there is labour for the working-man, population will not be secured of the sort which will build up a natural town containing all sections of society. It was a point which, when the idea was first mooted, was hailed entirely as utopian -much to be desired, but still unachievable. It was admitted that for a great number of businesses it would pay better to have works out in the country, where rents, rates and taxes would be less, where there would be more room for expansion, and where the workmen would be better equipped for their work from constant contact with the open air. We are happy to be able to demonstrate that not only has this been true in theory, but it is abundantly proved by events. The experience of the manufacturers of the Letchworth Garden City entirely proves the statement put forward, and on our visit there we shall have the opportunity of seeing what has been done.

It will be seen, therefore, that a Garden City is a proposal of definite sociological and economic basis. It deals at one and the same time with the problem of the overcrowding of the towns and the depopulation of the country districts, a problem which, although not so pressing in Belgium, is one which the bulk of civilised countries are regarding with alarm.

As a contrast to the few hectares of land which are called "Garden Cities" for the sake of deriving profit from the use of the name, we see that a Garden City is a self-contained town—industrial, agricultural, and residential—planned as a whole and occupying land sufficient to provide garden-surrounded homes for a population of from thirty to fifty thousand people, as well as a large stretch of open fields which would do much in providing the necessities of the population. It meets the difficulties raised in the first part of this paper as to the non-reproductivity of the towns by securing that the town shall have the healthfulness of the countryside, and it keeps the people in the country by bringing the benefits of the town to their doors.

Town life and country life both have two sides. On the one side the town offers its facilities for commerce and industry, for education, for social life; it offers a higher money wage and better opportunities for advancement; there are the clean, well-made roads, the benefits of sanitation, and, indeed, the resources of civilisation; on the other side, there is the congestion, the dirt and the squalor of the poorer parts, the loneliness of crowds, and, perhaps most important of all, the closing out of nature. And while the country secures health and vigour, the advantages of sunlight and fresh air, the freedom of the hills and valleys, the singing of the birds and the sighing of the trees, Nature's open door and open book, there is the lack of the town facilities; wages are low, opportunities are few, education is scant, and housing accommodation is often as bad as it is in the towns; there are few opportunities for self-improvement, and the lack of sanitation and of provision for recreation tend continually to drive the brightest spirits into the towns.

This is a state of things which the proper application of the Garden City method would prevent.

The Garden Suburb is the application of some of the principles of the Garden City to the growth of existing cities. It provides that the land shall be town planned first of all in order to prevent bad conditions springing up and to secure the provision of proper open spaces and proper building laws. They are residential only, and do not attempt to deal with manufacturing or with rural questions. Usually controlled by one body of individuals working for the common good, there is provided a complete scheme of building, so that not only is one house built well, but all the houses are built so as to form a complete street, as in our old-time towns, and every street is built to fit into the complete town, so as to operate for the utmost advantage of each inhabitant.

Throughout all these schemes the leasehold system of tenure is in practice, as by this means only can proper restrictions be enforced as to the development of the estate and the care to be taken in its development. The term of the lease may vary.

One of the most important results of the founding of these communities on a co-operative basis is the growth of the communal spirit and the encouragement of a spirit of fellowship amongst the inhabitants of these garden suburb estates. You will find that in all the important garden suburbs there is a club-house or institute or meeting-room of some kind where the activities of the whole estate are focussed, and which is the common home of the people. And nowadays, when the stress of competition and the bustle of everyday life is driving men farther and farther apart from one another, it is of the utmost value that we conserve these opportunities of drawing men's minds more toward one another, and of fostering a spirit of unity of purpose.

There remains to be dealt with the term "Town Planning," which is distinct from either of the two foregoing propositions, but is part of them as they are part of it. Town planning is the science of prevision in all civic matters, and is the affair of the State and of the Municipality. The subject will be dealt with in other reports, and here it is only necessary to say that town planning is an absolute necessity if we are to secure that a town is to develop rationally on lines which shall be for the health, comfort, and happiness of its inhabitants, securing order and beauty in its growth, providing open space, and preventing overcrowding, adding dignity to civic life and fostering a love of the town in the hearts of its inhabitants.

But here again co-operation is the secret of success. Combined effort for the common good can secure what individual effort, however valuable and however well-directed, can never hope to win. In the great struggle in which our countries are now engaged our strength, our hope of victory, lies in combined effort, in the merging of individual strength and of individual wisdom in common action for the defeat of the foe. So should it be in our national and municipal life. We can only successfully overcome the enemies dirt, disease, inconvenience, ugliness, by common action, by merging our own wishes and our own desires in a great aim for the public good; not seeking that our own little piece of ground may be developed merely in the way that we think best, but that it may be regarded as part of the street, part of the town, and that it must fill its place in the general scheme of the development of a well-ordered community.

I have attempted the difficult task of compressing into a short paper the principles of a movement which is many-sided, each side requiring much more amplification than the whole of this paper. How far the principles here laid down are applicable to Belgium and will be applicable to the new conditions arising in Belgium after the war it is not for us to say; there are questions of law and custom, of land tenure, of finance, which would all have to come under consideration.

While we advocate beginning afresh with a clean slate, we recognise that a great deal of the work will be restoring some of the ancient cities. We do not wish to suggest in any degree that the ancient beauties of your country shall be disregarded, or that your traditions shall be overlooked in the rebuilding that goes on; every care must be taken to preserve what is left from the destroyer's hand. Local customs, local traditions, and local history must all be studied fully, and due regard must be had to each if the rebuilding is to give lasting satisfaction.

It would seem probable that there would be an opening for the establishment of one or more Garden Cities in the full meaning of that term—possibly with different regulations and carried out in a different manner because of local conditions, but still aiming at that object towards which Mr. Ebenezer Howard strove—namely, the founding of the city beautiful upon a sub-structure of health and convenience. Whether or not the full scheme be adopted, there is no doubt whatever of the great opening for the applica-

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tion of the principles of town planning and of the Garden Suburb. Almost every civilised country has found one phase or another of the Garden City movement has answered to its requirements, and we may be confident that in Belgium also there may be an adaptation of the experience which has been gained in this and other countries.

It is for you architects, engineers, professional men, and citizens of Belgium yourselves to examine these problems and see how they can be applied, and in what measure. What is done must be done by you. We on this side are ready to show you where we have succeeded, and also where we have failed; our experience is placed at your disposal, that the final effort may be your own. Surely it is a noble ambition that out of the present disaster we shall ensure future good; that out of the ashes of her beauteous but war-scarred past a new and still beautiful Belgium shall arise, whose children shall never know the fear of treacherous invasion, and who, housed and equipped with all the resources of modern civilisation, may as bravely play their part in industry, in agriculture, in commerce, as their fathers have played on the battlefield.

OLD BRIDGES.

AN interesting and well-illustrated lecture was given on Wednesday evening, January 27, at Carpenters' Hall, by Mr. Aymer Vallance, M.A., F.S.A., dealing with the above subject. In his opening sentence he pointed out how the building and maintenance of bridges must always have assumed a paramount importance. It was from early times included by law in the *trinoda necessitas*, the threefold obligation from which no one throughout the realm, save under rare and special circumstances, was exempt. An instance of an exemption was the famous Abbey of Beaulieu, which, in a charter from King John dated January 25, 1204-5, was acquitted from paying toll "in all passages of bridges" throughout the kingdom and also from all works of bridges in perpetuity. As a general rule, ecclesiastics and religious communities were equally liable with lay people to the general duty of bridge-building and repair.

What kind of bridges were built in the earliest times would depend mainly on the materials to hand in any given district. Of a very primitive type is the bridge, or rather causeway, at Thirlmere; but the real home of such causeway bridges is the south-west of England, where one finds the famous example Torr Steps, on the Barle, not far from Dulverton. Although no cement is used, the stone slabs which compose it are of such enormous weight that they effectually resist the worst floods. Another ancient example of this trabeate type is Slaughter Bridge, spanning the Cornish river Camel, about a mile north of Camelford. In stone, however, it is comparatively rare to find bridges of post-and-lintel construction, which were impracticable for navigable rivers owing to the narrowness of the openings. The vast majority of bridge masons have accordingly availed themselves of the resources of the arch. So rational and so constructive is arch-building that it is only by extraordinary perverseness that an arched bridge can be made anything else than noble and comely.

A peculiar class of wooden bridge (of which there seems to be no old example in England) is the bridge covered to afford protection from snow-drifts. The quaint form of this type must be familiar to all who have visited Lucerne, where, across the mouth of the Reuss, remain two such, one dating from 1303.

Bridge construction offers many very special problems. But it is also simpler than that of other kinds of arched buildings in so far as the arches, whether semi-circular, segmental or pointed, are always barrel-vaulted without anything of the nature of cross-vaults or groining. The arches were in many cases stiffened underneath with transverse arches, forming huge ribs—an advance in constructive energy and strength corresponding to the economy which learned to dispense with superfluous wall masonry while strengthening it at intervals with buttresses.

The piers of bridges very often project anglewise on either side beyond the face. These projections serve the twofold purpose of buttresses and cutwaters, the latter breaking the impact of the current on the same principle as the pointed stem of a ship. These cutwaters were sometimes hipped and finished off before reaching the parapet level. When, however, they ran all the way up the side to the top (as seems to have been the usual custom in England), the triangular recesses in the parapet fulfilled the additional purpose of providing refuges for the safety of foot-passengers.

On the Continent an organised confraternity of bridge builders is known to have been in existence at least as early as the second half of the twelfth century, though they are not recorded to have spread into England. Under their superintendence was built the famous bridge across the Rhone at Avignon, dating from about 1180. Four arches of it still remain with the Chapel of St. Benezet on the central pier.

In time of war, of course, bridges always had a tactical importance, and that is why many of the larger ones were fortified or, in default, were so placed in relation to an adjacent castle or other defence works that the latter could command the approaches and protect the bridge against attack. Such bridges would, as a rule, form fairly level causeways. On the other hand, bridges without extraneous means of defence would, for greater security, be constructed with a gradient rising from each end to the centre. For it is obvious that a bridge with an incline in the middle must afford better cover for its defenders than a level bridge. Another simple device for affording flank protection was to place a bridge with its axis at an angle to that of the approaches, resulting sometimes in a very awkward turn. Another explanation of this may apply in cases where a ford preceded the erection of the bridge itself, the passage of the ford continuing in constant requisition for transit until the bridge was ready for use, so that the bridge had to be built alongside rather than on the exact site of the ford. Presuming, then, that the ford was in a direct line with the roadway, it follows that the bridge built subsequently could not but be out of line with the roadway.

In mediæval times nothing that rightly occupied and concerned humanity but was also first and foremost the concern of the Church. There was no hard and fast line of distinction drawn between sacred and secular, for religion entered into every phase of a man's existence, sanctifying all, even the most commonplace, of his pursuits and actions, day by day and hour by hour, from his cradle to his grave. It could not happen then but that a duty so indispensable as bridge building was for the temporal well-being of the nation should be approved and fostered by authority of the Christian Church.

Many English mediæval prelates discharged their pontifical office in its most literal sense. Thus, at Hereford, Bishop Richard de Capella, who occupied the see from 1120 to 1127, was a liberal benefactor towards the expenses of erecting a bridge across the Wye. Walter de Langton, Bishop of Lichfield from 1296 to 1321, built bridges across the minster pool in order to provide an easy communication with the city. An abbot of Ramsey built the existing bridge over the Ouse at St. Ives in Huntingdonshire.

Besides setting the example of good works themselves, it was customary in many instances for bishops to provide the faithful with an incentive by indulgencing bridges; that is, they offered remissions to such persons as cared to contribute toward the building or maintenance of bridges in lieu of other penance already imposed. It was eminently characteristic of mediæval Christianity that it knew how to elevate and transform by its hallowing touch the commonplace or irksome obligations of civil life to the rank and dignity of meritorious acts of mercy. "It is a blessed business bridges to make" was inscribed on the bridge at Abingdon.

A bridge being thus, as it were, a focus of piety, it was but natural if that piety found definite expression in the erection of chapels in close conjunction with bridges, the chaplain often having the duty of collecting for the upkeep of the bridge. A large proportion of the more important thus came to have a chapel, either actually upon them or at one end. No bridge chapel in England has continued in a decent state of preservation down to the present day. And this is in all cases to be explained by their former ecclesiastical status. Had they been parochial they might have had a better chance of escaping the rapacity of Henry VIII. or Edward VI. But being one and all of the nature of chantries, they were condemned as such to be despoiled at the Reformation. There yet stand remains of chapels at the end of the bridges of Rochester and Derby. But on the very bridge itself no more than three recognisable chapels survive—viz., at Wakefield and Rotherham in Yorkshire, and at St. Ives in Huntingdonshire.

Throughout the Middle Ages there was no bridge across the Thames below Kingston Bridge except London Bridge,

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twenty-one miles away. That fact has to be remembered to appreciate the supreme importance of this unique thoroughfare between the Metropolis and the South, the most direct highway to the continent of Europe. As the largest and most splendid in England, London Bridge became the wonder and pride of the whole nation.

The tradition is that the original wooden London Bridge was constructed in 1002, crossing the river somewhat lower down the stream; that is to say, further eastward than the present site. This early bridge, however, perished in a great conflagration in 1135; it was replaced by another bridge, likewise of timber, in 1165.

London's earliest bridge of stone dated from 1176, and is said to have taken thirty-three years in building. A priest named Peter de Colechurch has won immortal fame as its engineer. He died in 1205, having prepared for himself a sepulchre amid the foundations of the great central pier. In the direction of the work he had already, in 1201, been superseded by a Frenchman named Isembert, whom King John dispatched to England, and by letters patent appointed architect of the great bridge of London, then nearing its completion. It was finished about 1209. The enormous piers and widespreading sterlings round them offered so dense a barrier to the passage of the water between them that the tide, all above the bridge, never fell low enough to expose the vast stretches of unsavoury mud which make the riverside the noisome eyesore it becomes for several hours a day at the present time.

The mischief which ended in despoiling London of one of its splendid and historic monuments arose through the meddling of officials contrary to the advice of experts. In 1756 an Act of Parliament authorised the Corporation of London to purchase and take down the houses upon the bridge, and also to remove one pier, in order to form one large central arch in place of two smaller ones. Of these two measures, the first proved most injurious, the second absolutely fatal. The removal of the houses, which were bringing in a rental of over £800 per annum, disendowed the bridge and robbed it of the most fruitful source of means for its upkeep and repair; but bad as this might be, it was as nothing compared with the removal of the pier. The eminent engineer Mylne warned the authorities of the grave risk to the stability of the structure if they should tamper with one of its integral parts. But they insisted, and Mylne had no choice but to carry out their instructions.

The bridge across the Avon at Bristol ranked only second to London Bridge. The first stone bridge at Bristol was built in 1247, and a chapel in the middle of it was consecrated in 1361. A new bridge was opened in 1763, and the event prompted Thomas Chatterton to send to the *Bristol Journal* a fictitious account of the ceremonial of the opening of the mediæval bridge, an account which he pretended to have "taken from an old manuscript."

The third bridge in importance in the kingdom was Rochester Bridge across the Medway. It was built between 1389 and 1392. A new bridge lower down the stream was begun in 1851, the old one being demolished in 1858. The old one lasted 450 years, the new one hardly sixty before it was necessary to remodel it.

The importance of bridges consists in their very great utility. They were built because they were wanted to serve the needs of man. Bridges thus belong to the high category of works of architecture—at least they should so belong. But in present practice unfortunately they do not, for bridge building has come to be the monopoly of the engineer, who plans and arranges the whole thing, the architect being called in to add the superficial trimmings, which give the bridge a plausible pretence of architectural design. This practice is neither fair to the architectural profession nor to the public at large. The practical result is that instead of new bridges being, as they might be, and as old bridges erected under other conditions invariably were, among the monumental beauties of our country, they are among its worst disfigurements.

Mr. Vallance concluded with an appeal for the preservation of all the old bridges which remain to us. "I urge you," he said, "to remember what they once were and what they meant to our forefathers; to think how they were built in piety and consecrated, some of them by the blood of martyrs who laid down their lives for the sacred cause either of national freedom or of liberty of conscience. And then, remembering what glorious and hallowed associations cling to them, you will be persuaded that it is an outrage only one degree less impious than destroying ancient churches to destroy an ancient bridge."

THE CONCRETE INSTITUTE.

AT the fifty-sixth ordinary general meeting held on Thursday, February 4, a joint draft report of the Science and Reinforced Concrete Practice Standing Committees of this Institute on a standard specification for reinforced concrete work was submitted for discussion prior to its amendment and subsequent issue in final form. Professor Henry Adams, M.Inst.C.E., President of the Concrete Institute, was in the chair. The secretarial note says: "The draft report is copyright and is not for publication."

However, "the Press are permitted to refer to the draft report in general terms."

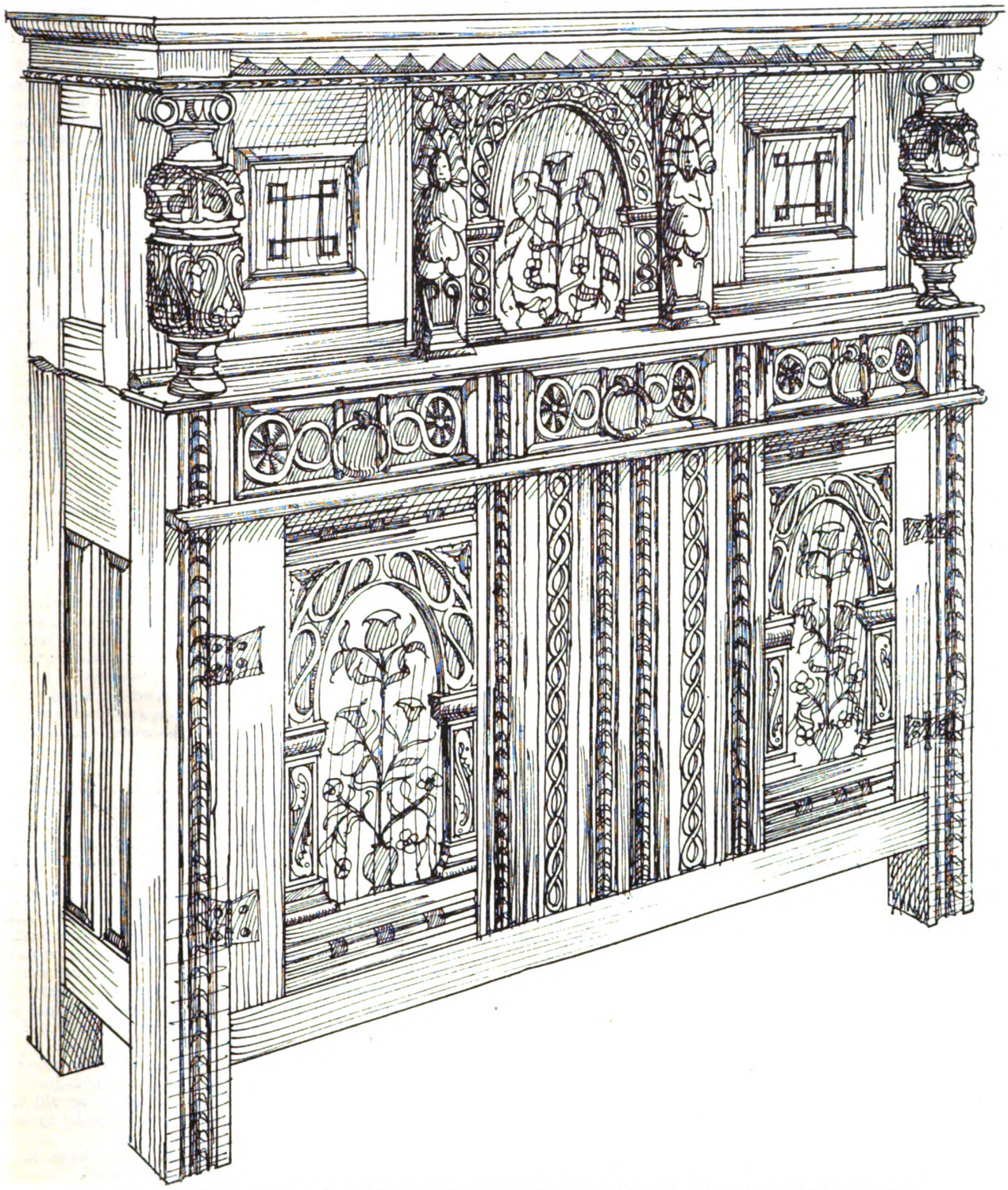
This we are prepared to do by stating our opinion that, on the whole, the report presents a very fair basis on which the much to be desired standard specification for reinforced concrete work might be framed by a joint committee representative of the various societies and interests concerned. Where the whole essential of effective criticism of a standard specification rests on a detailed examination of every individual clause it is obvious that general terms will fail in adequacy.

The submission of the report was succeeded by a discussion in which the following took part: E. Fiander Etchells, Assoc.M.Inst.C.E., F.Phys.Soc., Member of Council C.I., Chairman of Science Standing Committee; S. Bylander, Past Chairman J.I.E., M.C.I., Chairman of Reinforced Concrete Practice Standing Committee C.I.; Professor Henry Adams, M.Inst.C.E., President C.I.; Richard Coulson, F.S.I., M.C.I.; Gower B. Pimm, Assoc.M.Inst.C.E., M.C.I.; Morgan E. Yeatman, M.A., M.Inst.C.E., Member of Council C.I.; T. C. Dawson, M.C.I.; Henry J. Harding, M.C.I.; L. C. Hall, Assoc.M.Inst.C.E., M.C.I.; Allan Graham, A.R.I.B.A., M.C.I.; W. H. Lascelles, M.C.I.; A. van Osenbruggen, M.C.I.; G. S. Roberts, M.C.I.; A. Scott, A.R.I.B.A., M.C.I.; J. F. Warden, M.C.I.; E. P. Wells, J.P., Past President C.I.

Mr. E. Fiander Etchells, as chairman of one of the two committees concerned in the preparation of the report, opened the meeting with an invitation to the members to discuss the report and so help to frame the laws by which it was proposed they should be governed. The report had been made with a view to standardising as much as possible the methods of different specialists. A few years ago every one of these had his own methods. The committee endeavoured to ascertain what might be considered as the criterion of good work. Many specifications included clauses which were impossible to carry out, as, for instance, one which directed that all steel work should be dipped in "boiling" oil. The draft of the standard specification now offered represented the wreckage of the many clauses placed in front of the committee. Most specifications had been examined and they had endeavoured to make their own a consistent whole embodying the ideas current amongst all engineers of good practice. They could not say there was any particular clause taken from any particular specification which had been submitted, for in such technical matters there was no monopoly of truth. In order that there should not be one set of conditions for architects and another for contractors they had adopted the R.I.B.A. conditions of contract. The proposed Clauses 3, 4, and 13 followed general lines. There was some variety of opinion with regard to the details of storage; but the committee believed they had ascertained the consensus of authoritative opinion. They laid stress on the importance of keeping the cement in a "perfectly waterproof and airtight shed." In Clause 22 the term "coarse material" had been inserted to avoid the ambiguity of the word "aggregate." With regard to the materials to be used, the committee had followed fairly good practice. They had avoided some which were not suitable for the exacting conditions of reinforced concrete. Clause 30 departed a little bit from the R.I.B.A. report of 1912, the reason being there was some difficulty in obtaining the results required to pass the R.I.B.A. test. If the work falls below the suggested lowered standard it should not be passed. The form of bar illustrated in Clause 50 should strictly be a U and not a J. With regard to the protection of the concrete, it should be borne in mind that one disaster in reinforced concrete work may mean the loss of 100 potential orders, for there is a disposition to look on all such construction with doubt amongst those who have never had any experience of it. It is up to members of the Concrete Institute to prevent all failures. The committee have left it

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"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.



AN OAK BUFFET FROM THE ROW, WATERGATE STREET, CHESTER. Belonging to Mr. G. H. FENNAH.
Measured and drawn by B. FRASER

open whether the test pieces for ascertaining crushing resistance shall be 4 inch or 6 inch cube; in his opinion the 6 inch would give the better result.

Mr. S. Bylander, chairman of the other committee concerned in the preparation of the draft, explained with reference to tests that it was left to the engineer or architect to fill in the percentage proper for any particular job, the amount differing whether it is a big or a little one. It would generally vary from ½ to 1 per cent. It was fairer to the contractor that he should know what he has to set aside for the manufacturers' test to be carried out at the yard. The engineers' tests should be paid for by the employer. Of course, the phrase "airtight" in Clause 18 meant airtight as far as possible. The best test for steel and the simplest is undoubtedly the bending test.

Professor Adams, the President, explained that some of the clauses here given are alternative, therefore a choice would have to be made when the time comes. Thus the use is contemplated of either ordinary steel or high carbon steel.

AN OAK BUFFET, FROM THE ROW, WATERGATE STREET, CHESTER.

THE Row in Watergate Street is the venue of all the antique furniture collectors visiting Chester, for there are many dealers there.

This old oak buffet is from "God's Providence House," being quite a genuine old piece of furniture, and consists of two long cupboards, the bottom one being very high with a row of three drawers over and surmounted by a low top cupboard set back from these, leaving a shelf about 6 inches wide. The top projects from this low cupboard to line with

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the lower part, and is supported by two huge melon bulb supports, this construction being quite the usual one for these old dressers.

Its date will probably be about 1690, for the design and workmanship is of this period, the great point noticeable being the absence of mitres, which is characteristic of the time.

BUILDING BY-LAWS AND A COURT OF APPEAL.

A MEETING of the Institution of Municipal and County Engineers was held at the offices, 92 Victoria Street, Westminster, on the 5th inst. Mr. J. S. Pickering, Cheltenham, President, was in the chair. The subject for discussion was the following paper, submitted under the above title by Mr. H. D. Searles-Wood, F.R.I.B.A.:—

The resolution that was passed at the Royal Sanitary Institute Congress, in 1913, was: "That the Council of the Royal Sanitary Institute be requested to urge on the Local Government Board the desirability of the establishment by the Board of a tribunal of appeal from the decisions of local authorities on points relating to practices in the working of the Building By-laws, and should they consider that Parliamentary sanction is necessary for the formation of such a tribunal, to take steps to obtain such sanction."

I have been asked to read a paper on this tribunal of appeal, and I gladly avail myself of the opportunity, as I think that there is in some minds a misapprehension of the purpose for which this tribunal is to be appointed. The suggestion was that, in the event of a difference of opinion arising between the authority and the building owner as to the suitability of his design and the construction of the by-laws, the building owner should forward his drawings to the Local Government Board, with a statement of the argument he put forward why the local authority should pass them, and the local authority should state their reason for objecting; the decision of the Local Government Board should be binding on all parties, and there should be no reason why the matter should not be dealt with promptly and with little trouble. I am aware that the Local Government Board always decline to give a legal interpretation, as that is a matter that the Courts must settle, but this reference that I suggest would in most cases be as to the reasonableness of the objections, and would not necessarily involve the legal construction of the by-laws, but simply the usual reading of it, with which the Local Government Board would be familiar.

It appears to me that such a tribunal would be more impartial than any local court, and, being a technical body, the decisions would carry more weight, and in course of time these decisions would form a series of precedents which would be of great assistance to both local authorities and building owners.

There has been a tribunal of appeal in the London Building Acts for many years, and it is constituted, in the 1894 Act, as follows:

"One member shall be appointed by a Secretary of State.

"One member shall be appointed by the Council of the Royal Institute of British Architects.

"One member shall be appointed by the Council of the Surveyors' Institution.

"No member or officer of the Council (i.e. London County Council) shall be a member of the tribunal of appeal.

"Members of the tribunal of appeal shall be appointed for a term of five years, and any such member shall be eligible for re-appointment.

"It shall be lawful for the Lord Chancellor, if he think fit, to remove for inability or misbehaviour, or other good and sufficient cause, any member of the tribunal of appeal.

"Upon the occurrence of any vacancy on the tribunal of appeal, or during the temporary absence through illness or other unavoidable cause of any member thereof, a Secretary of State, the Council of the Royal Institute of British Architects, or the Council of the Surveyors' Institution (as the case may be), whichever of them shall have appointed the member of the tribunal whose place shall be vacated, shall appoint forthwith a fit person to be a member (either temporary or permanent) of the tribunal, in lieu of the member whose place is vacated, or who is temporarily absent as aforesaid.

"Each member of the tribunal of appeal shall be entitled to such remuneration, either by way of annual salary or by way of fees, or partly in one way and partly in the other, as a Secretary of State may from time to time fix.

"It shall be lawful for the tribunal of appeal to appoint such clerks, officers, and servants as they may find necessary, who shall be paid such salaries as shall be determined by the Council, and to provide offices and to obtain such professional advice and assistance as they may find necessary.

"It shall be lawful for the Council (*i.e.*, L.C.C.) to defray the expenses of supporting any decision of the Council or of the superintending architect or of their engineer or of a district surveyor by counsel and witnesses before the tribunal.

"It shall be lawful for the tribunal at any time to state and the tribunal shall if ordered by the High Court, or a judge thereof, on an application in a summary manner of the High Court on any question of law involved in any appeal submitted to them. The High Court shall hear and determine the question or questions of law arising on any case stated by the tribunal of appeal, and shall thereupon reverse, affirm, or amend the determination (if any) in respect of which the case has been stated, or remit the matter to the tribunal of appeal with the opinion of the Court on the case stated, or may make such other order in relation to the matter as the circumstances of the case require, and may make such order as to the costs of the case and in the High Court as to the Court may seem fit.

"The tribunal of appeal shall, subject to the provisions of this Act, have jurisdiction and power to hear and determine appeals referred to them under this Act.

"For all the purposes of and incidental to the hearing and determinations of any appeal the tribunal shall, subject to any rules of procedure duly made, have power to hear the Council (L.C.C.) and the parties interested either in person or by counsel, solicitor, or agent as they may think fit, and to require the production of any documents or books and to confirm, or reverse, or vary any decision and make any such order as they may think fit, and the costs of any of the parties to the appeal, including the Council, shall be in the discretion of the tribunal.

"The tribunal of appeal may from time to time, subject to the approval of the Lord Chancellor, make regulations consistent with the provisions of this Act as to the procedure to be followed in cases of appeal to the tribunal including the time and notice of appeal and as to fees to be paid by appellants and other parties.

"Any order of the tribunal of appeal may be enforced by the High Court as if it had been an order of that Court.

"All fees and sums of money paid to the tribunal of appeal shall be paid over to the Council and carried to the county fund, and the salaries or fees payable to members of the tribunal and the office and establishment expenses of the tribunal and expenses incurred by the tribunal and the Council in reference thereto shall be defrayed out of the county fund."

I have set out these clauses in full so as to give some idea of the way the tribunal of appeal under the London Building Acts is constituted. I do not suggest that it should be a precedent for the tribunal of appeal for the model by-laws, but it has been found to work well in London.

One of the points for discussion might well be as to the way in which the tribunal should be constituted.

With regard to the arguments in favour of such a tribunal, it seems to me, judging by many of the suggestions that are made in papers on the amendment of the by-laws that there is a wrong impression of the principle upon which by-laws are founded. We are a free people, and there is a common law right for every man to build as he likes on his own land.

The very interesting *Liber Albus* of the City of London, a collection made during the mayoralty of Sir Richard Whittington, of documents, even then ancient, contains FitzAlwyne's Assize of Buildings, written in 1189. It has the following passage on the obstruction of the view from windows. "If any person shall have windows looking upon his neighbour's land although he may have been a long time in possession of the view from such windows aforesaid, nevertheless his neighbour may lawfully obstruct the view from such window by building opposite the same, or by placing anything there upon his own lands in such manner as may to him seem most expedient unless the person who has such windows can show any writing by reason whereof his neighbour may not obstruct the view from these

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windows." This shows that the right to build as the owner liked existed in those days.

The by-laws are only concerned with the safety of the public and not of the owner. This is shown by the exempt building clauses, which to some extent are wider in the Metropolitan Building Acts than in the Model By-laws. Before 1875 the by-laws only regarded the safety of the public from two standpoints, that is, fire and stability. After the Public Health Act it was recognised that the sickness of the occupier might be a menace to the public, and the sanitary aspect was added to the other two. The Amended Rural By-laws recently issued, which were based largely on the suggestions made by the Royal Institute of British Architects, clearly show the three points of view of the safety of the public. As I read the suggestions made in the various papers to amend the by-laws, this is not the idea of their authors, but they want to make the Building By-laws a complete code of building construction, which is impossible. The Local Government Board have at present before them the London County Council By-laws for Reinforced Concrete Construction, which, when approved, will, I think, be largely used all over the country for reinforced concrete regulations. Anyone who makes a careful study of these rules will at once see that they require very expert knowledge to construe them, and that it would be hopeless to take a dispute, as to whether the design objected to was properly designed, before the local Courts. And it is with this in view that I strongly urge the formation of an expert tribunal that could give an unbiassed opinion that would carry weight in such disputes as are certain to arise. I am quite ready to admit that the knowledge of the stresses and strains in buildings has improved very much of late years, and the ability to calculate these reactions is possessed by a great many officials; but as this form of construction is rapidly coming more and more to the front, and ingenious forms of its application are constantly being designed, it is difficult for those officials, who have so many other duties besides surveying, to keep abreast with the times. Experience in the carrying out of this form of construction is very essential to the appreciation of new forms of design.

Some people are of the opinion that the time has come when there should be a general Building Act for the whole country. Let us hope if this comes to pass that it may be so drawn as not to stereotype existing methods of construction, but stimulate new and better methods than at present. It might be a good thing to encourage architects to work out the strains and stresses in their structures by making a law that the methods of calculating the designs should be submitted to the district surveyor, and if found correct the construction should be allowed, and thus do away with all those cast-iron schedules and rules that so often hamper an original design.

The other point that I wish to touch on is the law as to party structures.

The rules laid down in the Metropolitan Building Act of 1854 for dealing with the rights of the building and adjoining owners of a party wall have worked so well that it is surprising no other city or town has adopted the same system, which is, briefly, as follows:—

Where a building that has party walls is about to be rebuilt the building owner serves on the adjoining owner of the party wall notices which describe the work that is to be done to the party walls, and in this notice the building owner appoints a surveyor to represent him. If the adjoining owner does not agree within fourteen days of the service of the notice, a difference is said to have arisen, and the adjoining owner appoints a surveyor to represent his interest, and these two surveyors meet and appoint a third surveyor.

The first two surveyors then examine the party structure and draw up an award, in which is set out the work that has to be done, and when this award is signed by the two surveyors it is published and the matter is settled. Should the two surveyors not be able to agree on an award, the third surveyor is called in, and within seven days he has to appoint a day for a hearing, and the three surveyors meet and any two of them can agree on an award, which, when signed by the two, is published and becomes a binding document, only to be upset on appeal before a magistrate. The position of the third surveyor is not quite that of an arbitrator, he is only equal in rank to the other two surveyors, but it has been found to work well, and many awards are made by means of the third surveyor which could not be made between the two surveyors in the first instance.

The third surveyor, being quite impartial, can complete the award which one of the interested surveyors would not care to sign. This method of dealing with a difficult situation is really a great help to architecture, and some such system should be part of the Statute law. At present the law on the subject is that the party structure is common with the two parties, the building and the adjoining owner: it cannot be touched without the assent of both parties, and there is no means of compelling this consent. It is in this respect that the London practice has such great advantages.

The term "party wall," though often used merely with the signification of a wall separating adjacent buildings, means, in its general sense, and is properly applicable to, any wall which parts or divides adjoining lands, whether built upon or not, held by different owners. With regard to ownership and rights of user the term may be used in four different senses. It may mean

(1) A wall of which the adjoining owners are tenants in common.

(2) A wall divided longitudinally into two strips, one belonging to each of the neighbouring owners.

(3) A wall which belongs entirely to one of the adjoining owners, but is subject to an easement or right in the other to have it maintained as a dividing wall between the two tenements.

(4) A wall divided longitudinally into two moieties, each moiety being subject to a cross-easement in favour of the owner of the other moiety.

But the most ordinary and primary meaning of the term is a wall of two adjoining owners who are tenants in common.

The common user of a wall separating adjoining lands belonging to different owners is *prima facie* evidence that the wall and the land on which it stands belong to the owners of the adjoining lands in equal moieties as tenants in common. And when a wall has been erected at a joint expense of adjoining owners, and held and used by them in common, it seems clear that in the absence of evidence to the contrary a jury would be directed to find that the wall and the land on which it stands were held by the two owners as tenants in common. In the first case the defects of the law as it stands are that nothing can be done to the wall without the consent of the adjoining owner, and there is no power to compel him to give his consent. If the wall be out of repair and one owner repair it, he cannot compel the other owner to contribute. In the second case, where the wall is divided into two strips, either strip can be removed without the consent of the owner of the other strip, and without regard to the efficiency as a party wall of the other portion. But there may be a right to lateral support. The right of the one house to lateral support from an adjoining house generally has its origin in two or more houses having been built by the same owner at the same time. The right of lateral support may also be derived from an express grant, or it may be claimed by prescription.

When the wall is a party wall in the third sense, a wall which belongs entirely to one of the adjoining owners but is subject to an easement or right in the other to have it maintained as a dividing wall, or where a wall is a party wall in the fourth sense—viz. a wall divided longitudinally into two moieties, each moiety being subject to a cross-easement—the owner of the servient tenement is not, unless the duty is cast upon him by express stipulation, bound to repair; the easement being for the benefit of the owner of the dominant tenement, it is for him to do the necessary repairs, and it is considered that he will have the right to enter upon the servient tenement for that purpose. But in the fourth case, if either party took down his own moiety, he would be liable to an action in respect of any damage which might thereby result to his neighbour.

When one of two adjoining owners builds a house so that one of its external walls stands upon the ground of his neighbour, the owner so building will, in due time, acquire a title to such wall under the statute of limitations, for possession of the house is possession of the wall, which is but a part of the house. But in such a case the owner of the land can, at any time before the statutory period has elapsed, bring ejectment and recover possession of such site with the wall thereon. But when a man erects a building against his neighbour's wall, utilising it for the purpose of support, and has a covering for one side of such building, he will not by lapse of time obtain a statutory title to the wall, for it does not form part of the building so erected, but is merely an abuttal thereof, and cannot be considered as in his exclusive occupation or possession. But

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he would, after the lapse of twenty years, become entitled at least to an easement of support from his neighbour's wall and his roof and other analogous rights. A wall may be in part of its length a party wall, and in part of its length an external wall, and there is no distinction between height and length. A wall may be a party wall up to part of its height, and may be an external wall for the rest of its height.

DISCUSSION.

Mr. Edward Willis (Chiswick), in proposing a vote of thanks, said there was one point raised in Mr. Searles-Wood's paper which he would like to refer to—namely, the assertion that where a man builds an external wall and it happens to abut on his neighbour's external wall he acquires a prescriptive right to support. It sounded fair and reasonable that it should be so. In discussing any suggested building legislation it should be remembered that a thing extremely useful in London would not be so useful in the country, where the circumstances were so different. They all appreciated the County Councils and their engineers; but he was not sure it would be desirable to throw more work on the surveyors in advising the County Councils on these matters. Again, ought local authorities to have discretionary power in regard to the by-laws? There was none at the present time. Mr. Searles-Wood had stated, "The by-laws are only concerned with the safety of the public, and not of the owner." Personally he considered they very largely covered the safety of the occupier. Engineers occasionally came across youthful architects, not so brilliant as the reader of the paper, whose plans, as submitted, invited disaster. The time was no doubt coming when there will be required reinforced-concrete by-laws, though it was better to sit on the fence for the moment. While a general Building Act for the whole country would be very useful, it would be impossible to get over the fact that what was suitable in one town or district might be totally unreasonable in another. Any general Building Act would have to contain special regulations for certain districts. The constitution of the existing tribunal of appeal in the London Building Acts was, of course, very excellent, and it has worked admirably.

Mr. A. E. Collins (Norwich) declared he was a great believer in appeals. Anyone who had to carry out by-laws knew what the difficulties were. Sometimes quite reasonable proposals have to be negatived because of the way in which the by-laws must be administered. He was afraid, however, it would be an impossible situation to have by-laws and then not carry them out whenever such a course seemed desirable. Local authorities ought to be able to insist upon actual compliance. But anyone who felt dissatisfied should have a court of appeal. The various County Councils, however, would be the worst court possible. The general lines of the existing tribunal under the London Building Acts would do for the country as a whole. The by-laws ought to vary in different localities, thus a densely crowded area being differently controlled to a thinly populated one. One code might apply to the entire country, but with different sections. Sanitation and stability should be completely provided for. They were promised by-laws on the L.C.C. pattern for reinforced-concrete construction, but reinforced-concrete buildings were even now springing up in rural areas, and, moreover, it was unfair to expect a rural surveyor to be able to handle the L.C.C. code.

Mr. Norman Scorgie (Borough Surveyor, Hackney) considered that a good deal of misconception existed in reference to London's tribunal of appeal. It had nothing to do with the construction of buildings; it was only a place of appeal from any act of the London County Council in respect of certain powers they possessed. The tribunal did not deal with ordinary buildings which came under the Building Acts and the district surveyors. In his opinion the giving of discretionary powers under the by-laws would be a very unwise thing, for influence would inevitably be brought to bear on the official. But if the local surveyor can say definitely, "These are the by-laws and they must be obeyed," all goes smoothly. Such discretionary powers would not conduce to the better government of this country, the promotion of sanitation, of healthy dwellings, or the health of the public. He had been told by architects experienced in reinforced-concrete building that if the rules as forwarded by the L.C.C. to the Local Government Board are insisted upon it will be cheaper to build in brick or stone.

Mr. W. R. Davidge, A.R.I.B.A., F.S.I., pointed out that the tribunal of appeal possessed power of alteration from the decision of any London district surveyor. The fact of there being that provision ensured that the law will be wisely administered throughout the country. If power of altering by-laws was granted it could not in fairness be left to small local authorities, but only to some independent body. They would all agree that a local authority should have definite rules to work to: but they should be relaxed in exceptional cases. Division by zones was one method. The proposed tribunal of appeal was the ideal towards which they should work. The existing London tribunal was much talked about, yet it does very little—probably not more than two or three cases in a year—yet there are 40,000 jobs each year in the Metropolis. The London County Council is itself a tribunal of appeal, and they can allow modifications. Since the first London Building Act of 1189 there has been an almost consistent sequence of Acts. The 1707 Act was responsible for many of the existing ridiculous clauses, which were fair enough at a time when there was nothing more than the "village squirt" in the case of fire.

Mr. T. R. Smith (Kettering) said that, speaking as a country member, he would be pleased to see some tribunal of appeal. But it would have to be other than the County Councils, which were composed mainly of country gentlemen, who knew nothing about such matters. Personally he would prefer the Local Government Board.

Mr. Jenkins said that local authorities could not possibly be their own tribunal in deciding cases, especially in their own district. Sometimes it was extremely difficult to know what to do. He had never yet seen a by-law which was a really good one from beginning to end. But he had heard builders declare they would rather go to a district where they would have even harsh treatment—so long as they knew exactly how they stood—than to another where discretionary power was attempted to be used.

Mr. S. G. Turner pointed out that three questions might arise in by-laws: (1) That they were certain and reasonable—purely a question of law, for it depends upon the power which the statute gives to the authority; (2) the interpretation of the by-law; (3) whether in any given case it would be just or fair to dispense with the requirements of the by-laws. There would be a considerable addition to the work of municipal engineers if they or their authority possessed power to dispense with the by-laws. It was important to remember that local authorities enjoyed no more right to dispense with their own by-laws when they were the builders than when other people submitted plans.

Mr. J. S. Brodie (Blackpool) mentioned that he had had upon one occasion to tell his authority they were not allowed to do what they proposed; as a consequence they got a direct dispensation from the Local Government Board from that particular by-law. Surveyors knew perfectly well that enough discretion was taken already without permission. His advice was to give no discretion at all, but to lay down hard and fast lines—otherwise he did not know where they would end. He hoped they would be preserved from a complete code of building construction, for it would shut off enterprise, make everything of a cast-iron pattern, and put this country in the position of Germany.

Mr. F. Wilkinson (Wimbledon) recalled one case where the Board of Education broke the by-laws with impunity. At Wimbledon one of the chief troubles had arisen out of the desire of architects to design their windows very low indeed.

THE ROMAN WALL OF ANTONINE.

IN a paper on "Some Recent Discoveries on the Line of the Antonine Wall," read before the Glasgow Archæological Society, Dr. George Macdonald pointed out that although it was possible to trace the line of the Antonine Wall for a good many miles with very substantial accuracy, there were nevertheless a considerable number of points, and some of them rather critical points, where its destruction had been so complete that we were left without any apparent guidance, and where certainty could only be obtained by properly directed exploration. For two or three years past, with the aid of a research grant from the Carnegie Trust, he had been carrying on, at odd moments, a series of investigations designed to settle the more conspicuous cases of doubt. The Ordnance Survey Department were co-operating with him, and his conclusions were being embodied in all new issues of their maps. After describing the methods employed, and acknowledging the help and kindness he had received from proprietors and tenants, he

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gave a detailed account of some of the results that had so far been secured, dealing more particularly with the stretch lying between Old Kilpatrick and Duntocher, and with the part in the immediate neighbourhood of Cawder House. In the former case, where the wall had entirely disappeared and only one or two isolated fragments of the great ditch remained visible, all existing surveys were defective or erroneous for the greater part of the distance. Excavation at carefully selected spots had, however, now made it possible to lay down the course of wall and ditch from end to end of the section without a break of any kind. The most satisfactory proof of the correctness of the new survey was afforded by the discovery of the remains of the long-lost fort at Old Kilpatrick. It was situated in a commanding position on a plateau just above the bank of the Clyde, and had apparently been defended by ramparts of turf. The outline of a buried fort had also been recovered in the glebe at Cadder Manse, while the mystery that surrounded the course of the wall here and within the policies of Cawder House had been completely cleared up. Incidentally it had been shown that the fine tumulus, which has so long enjoyed the reputation of being a Roman castellum, had nothing to do with the Romans at all. But it did not thereby lose its interest. It merely became a mediæval, instead of a Roman, piece of antiquity, for it was unquestionably a mote-hill. The estate of Cawder had been fued by the Bishop of Glasgow to Sir Alexander de Strivelin soon after 1180, and it was thus in the highest degree probable that the tumulus represented the original stronghold of the Stirling family, in whose possession the lands of Cawder had remained continuously till to-day. The work done towards the eastern end of the wall was also referred to briefly. A third fort hitherto unknown has been identified beyond Falkirk, and the curious discovery made that for at least four miles of its course the wall was not built of sods, as it was in the west, but of earth between two retaining lines of clay.

REIMS CATHEDRAL.

In a lecture before the Edinburgh Art Guild Professor Baldwin Brown gave an appreciation of this masterpiece of architecture, in which he said that the Cathedral of Reims was on the whole the most perfect monument of Gothic architecture, and as such it might fairly be termed the greatest, most varied, most inspired work of human art. Architecture and the decorative arts had combined in it to produce a masterpiece the only rival to which could be found in a fully equipped Greek temple such as the Parthenon. The Gothic church, however, possessed one element denied to the Hellenic masterpiece, and this was the element of mystery, by which an appeal was made to the imagination. Greek work was absolutely clear and defined, whereas in the mediæval Christian monument that embodied the romantic spirit of the North there was always the suggestion of something beyond, of spaces and details that could not be fully explored and grasped, and this gave the Gothic building its unique impressiveness and interest. The name "Gothic," which had no real significance, had been invented at the time of the Renaissance by the Italian writer Vasari, and was used in the sense of "barbarous" or "uncouth." To the people of the present day, on the contrary, Gothic architecture and decoration represented extreme refinement There was intellectual refinement in the scientific precision, the logical consistency, displayed in the construction, and there was ethical refinement in the humanity and tenderness that gave such a charm to the figure sculpture with which the French cathedrals were so lavishly adorned. The Gothic church possessed another feature of interest that gave it a special importance to a student of artistic history, in that the qualities shown in it were directly expressive of the life of the times. The building was the creation of the twelfth century, and it came into being in the central district of France. This region, under the enlightening rule of monarchs of the modern type, such as Philip Augustus, was at that epoch the theatre of new movements in the political, social, religious, and intellectual spheres, and in the domain of the imagination and of the emotions, and every aspect of these movements had left its impress on the great architectural monuments that were the chief glory of the age. The construction of a church like Reims had been well illustrated by diagrams prepared by French architects. From the interior view the building seemed to consist in a canopy of stone upborne at a great height by a series of slender supports of the lightest possible kind, the intermediate spaces being no longer walls, but a mere screen of coloured glass. When we looked on the outside, however, we saw that there was the same amount of walling as in the earlier styles, but panels, as it were, had been taken out of the walls, turned round at right angles to their original positions, and used as piers for the lateral support required by the vaults. The whole system of Gothic vaulting, with its supports in the form of flying buttresses, was highly scientific, and the materials were very economically disposed.

OLD EDINBURGH CLUB.

At the seventh annual meeting of the Old Edinburgh Club the Chairman, in moving the adoption of the report, said that the book for 1913, which was placed in their hands on the previous day, might be accepted as evidence of the continued virility of the club. In spite of disappointments in two directions, it contained three articles of considerable importance. The first related to the recent discoveries in the Castle, a work which was carried out with considerable acumen and knowledge by Mr. Oldrieve, and it was to his efforts that the ancient castle of David II., with its walls 60 feet high on the one side and 30 feet on the other, was permanently brought to light after its long entombment of nearly three and a-half centuries. The second article on the Incorporation of the Skinners of Edinburgh by Mr. Angus was one of great interest and importance in the history of the city, and he had no hesitation in characterising his paper as a model both in the matter of research and in the style of writing. The third and last article was by Mr. Fairley, who continued his interesting extracts relating to the grim old Tolbooth, which formed so prominent a feature in old Edinburgh life. The volume for the year 1914 would be entirely devoted to a liturgical examination by Mr. Frances C. Eeles, their greatest liturgical scholar, of the book, now in his (Mr. Bryce's) possession, colloquially known as the Service Book of Holyrood Abbey. So far as he was aware, there was only one other book of a similar nature, that on the Arbuthnot Missal, that had hitherto been printed. The volume for 1914 would therefore form, in his opinion, a landmark in the series of their publications. At the present moment they were one year in arrear with their annual volume, and the Council proposed to issue the book for 1914 in the month of September. They also proposed to issue the volume for 1915 in the month of January next, so that during the next twelve months two books would be issued, and their series thereby brought up to date.

For the 1915 book they were well provided with new and important material. It would include an article by Dr. Blaikie on the defence of Edinburgh in 1745; a paper by Mr. R. K. Hannay, Curator of the Historical Department of the General Register House, on the foundation of the University of Edinburgh; the Ancient Church Bells of Edinburgh and its neighbourhood, by Mr. Eeles; a critical paper, also by Mr. Eeles, on the Breviary belonging to the Chapel of St. John the Baptist at the Sciennes; a further article on the sculptured stones of Edinburgh, by Mr. John Geddie; a further contribution by Mr. Fairley of the Tolbooth Extracts; excerpts from the Calendar of Original Documents preserved in the Register House, so far as they related to Edinburgh and its immediate neighbourhood; and an article or two on the Kirk of Field and some of the minor religious establishments in the city, by himself.

They were fortunate in Edinburgh in possessing vast stores of records relating to mediæval times. The Register House with its numerous records and publications, the City Munimenta, the Advocates' Library, and that of the University of Edinburgh, afford ready means of research, and he hoped to receive assistance in that direction from the individual members of the club. It might be of interest to state that Miss Borland, daughter of a minister of the Church of Scotland, had recently been engaged in framing a catalogue of the magnificent manuscripts preserved in the University Library, and that she had been the means of bringing to light a number of historical documents of the utmost importance. These included an early Celtic Psalter with the Celtic Division of the Psalms, and dated either in the eleventh or twelfth century. It bore the inscription in a sixteenth-century hand, "Liber magistri Johannis Reyd, Cancellarij Aberdonensis," and was therefore probably of Scottish origin. It was to be remembered that there was no document in Scotland at the present moment of Scotfish handwriting written prior to the year 1100. There had

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also been brought to light a very important fragment of a fourteenth-century Antiphoner containing part of the Service for St. Columba's Day, with the ecclesiastical plain chant or Gregorian music. That was the earliest piece of music known to have been written in Scotland. In England many ladies had devoted themselves, with considerable success, to historical research, and it was a great satisfaction to know that Miss Borland, a native of Dumfriesshire, possessed the erudition and determination to tackle the compilation of such a difficult and learned work.

COVENTRY PRIORY.

OUR contemporary the "Coventry Herald" has organised a series of lectures in aid of its Belgian Relief Fund, and in this series the Rev. D. H. S. Cranage, D.Litt., delivered a highly interesting address on "The Old Priory of Coventry."

Dr. Cranage said that at one time Coventry possessed one of the finest cathedrals in the country, and he hoped that now that it was proposed to have a Bishop of Coventry the time would not be far distant when the old glory would be revived, with St. Michael's filling the place of the cathedral. The old cathedral was not what was commonly known as a cathedral, but a priory. A priory was the home of monks, and a monk was a man who retired from the world to work out his own salvation. The order of monks which founded the priory was that of St. Benedict, and they were commonly called the "Black Monks." Of course everyone in Coventry had heard of the Grey Friars and the Black Friars, but most people did not know the difference between a monk and a friar. While the monks were men who retired from the world to work out their own salvation, the friars were men who went out into the world to work out the salvation of others, and they were to be found in the poorest districts, often without buildings of their own. Most monks, said Dr. Cranage, were laymen, the men who corresponded to monks, but who were ordained, being called canons. Another powerful order of monks who had a house in Coventry were the Carthusians, of whose houses there were only nine in existence, one of which was in Coventry. England was unique in having no less than eight cathedrals which were also priories, one of which was the Coventry Priory, this one in Coventry being the only one in England which was destroyed in the Reformation. All the others were still in existence.

The Coventry Priory was first founded as a nunnery by St. Osburg, a virgin of great piety, early in the eleventh century. It was burned down in 1016 by the Danes, and was in a state of non-existence until 1043, when the Lord Leofric and Lady Godiva founded a Benedictine Abbey. Originally, Coventry was in the great Mercian diocese, but later on was merged into the diocese of Lichfield. There were six bishops who called themselves Bishop of Coventry only, and after a time the title became Bishop of Coventry and Lichfield, or the Bishop of Lichfield and Coventry, used indiscriminately. The Priory was situated to the north of St. Michael's, and went under the name of the cathedral church of St. Mary. It was a very large building, its site being bounded by Butcher Row, Priory Row, on the west and south, Priory Street on the east, and the river on the north. The Bishop's palace was to the south of the cathedral, at the north-east corner of St. Michael's Churchyard. Ruins of the extreme west end of the cathedral were still in existence adjoining the Blue Coat School. The only clue as to the style of the structure could be obtained from these ruins and the western tower which still stood, although it had been cased in and so looked quite new, except at the base, where the old structure could still be seen. Brown Willis, writing about the cathedral, said that it was like Lichfield Cathedral, with three spires, only it was of an earlier date, and also was built on a much grander and larger scale, the spires being wider apart and leaving more space for the main building. The site of the nave was now occupied by a graveyard, while the Constitutional Club stood where the south transept was, and the gardens of the club occupied the position of the south transept. There could be little doubt that in the twelfth century there was an organ in the cathedral. Behind the high altar was the shrine of St. Osburg, in which were relics, including, it was said, an arm of St. Augustine.

Coventry was renowned at the present time for its three spires, but in the fifteenth century there were five spires, all clustered together. The domestic building of the Priory, of which scarcely a trace remained, was to the north. The chief part of the cloister was the south walk, adjoining the church. In this walk was the scriptorium, in which the monks did their reading and writing, including the marvellous illuminating work for which monks were famous. Another important part of the building was the chapter house. In the chapter house meetings were held every morning, and the monks confessed the sins of the previous day, and the Lord Abbot meted out suitable penalties, often including corporal punishment. The chapter house of the Coventry Priory had an especial interest in that Henry IV. in 1404 held a Parliament in it. The common house was the only part of the Priory in which the monks were allowed to have a fire. In the west walk of the cloister the novices were allowed to play such board games as "Fox and Goose," and here they also received their instruction. Much had been said about the way monks lived and what they used to eat, but the rule of St. Benedict forbade the eating of the flesh of quadrupeds by all except the sick or delicate, and there could be little doubt that during the earlier years, when the rules were more strictly adhered to, that the monks lived almost entirely upon vegetables. A list of table manners was given to the young monks, in which among other things they were warned against cutting the common cheese without first wiping their knives. The guest house played a most important part in the life of the monastery, it being a rule that all travellers should be welcomed. An interesting rule of St. Benedict governing the welcoming of travellers was that the monks who received the stranger were to prostrate themselves until their foreheads touched the ground just as if the new arrival were Christ. The suppression of the monasteries took place in 1589, and there could be little doubt that the chief bait which tempted Henry VIII. was the large income obtained from the monastic property by the Prior. The Prior of Coventry was a very important person, being a member of the House of Lords.

PORTRAIT PAINTING.*

THE TECHNIQUE OF THE GREAT MASTERS.

By THE HON. JOHN COLLIER.

(Concluded from last week.)

BOTH Rubens and Van Dyck were men of extraordinary gifts, but they were both courtiers and both over-prolific, and their art suffered accordingly. The essential point of the technique of Rubens is his insistence on the transparency of the shadows. He is reported to have said: "Begin by painting your shadows thinly; be careful not to let white insinuate itself into them—it is the poison of a picture except in the lights; if white be once allowed to dull the perfect transparency and golden warmth of your shadows, your colouring will no longer be glowing, but heavy and grey. The case is different in regard to the lights; in them the colours may be loaded as much as is thought requisite. It is necessary, however, to keep them pure. This is effected by laying each tint in its place, and the various tints next each other, so that by a slight blending with the brush they may be softened by passing one into the other without stirring them much. Afterwards you may return to this preparation and give to it those decided touches which are always the distinctive marks of Great Masters."

From this it is obvious that there was no monochrome preparation. The painting from the first was fully coloured. Rubens used a white ground which shone through his transparent shadows and gave them a wonderful warmth and luminosity—often too much. His touch is very liquid, so that he obviously used a very fluid medium. The portraits are altogether a little artificial, but they are very dexterous, and have a most agreeable swagger. He had, as I have said, a tendency to flattery, in pursuit of which he often made the eyes too big—a very fatal fault. Holbein, on the other hand, had a slight tendency to make the eyes too small.

Van Dyck's work at his best is sounder than that of his master. He made less use of transparent shadows, thereby getting much more truth of tone. He was quite as fine a colourist, and, on the whole, a better draughtsman. His technique is to be seen at its best in the portrait of an old man in our National Gallery who is now called Cornelius Van der Geest. He was justly proud of this portrait, and

* A lecture delivered on January 27 before the Royal Society of Arts.

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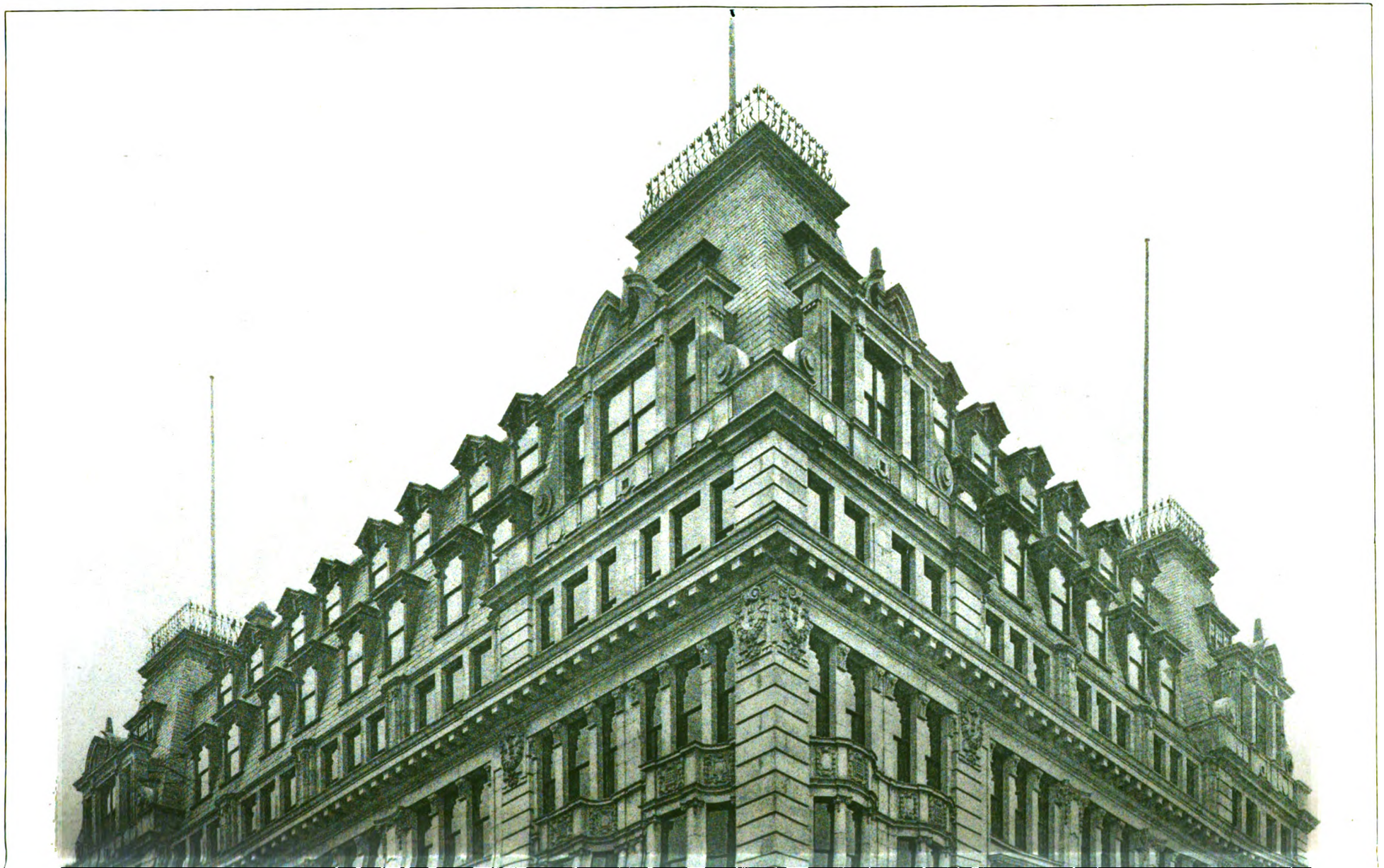
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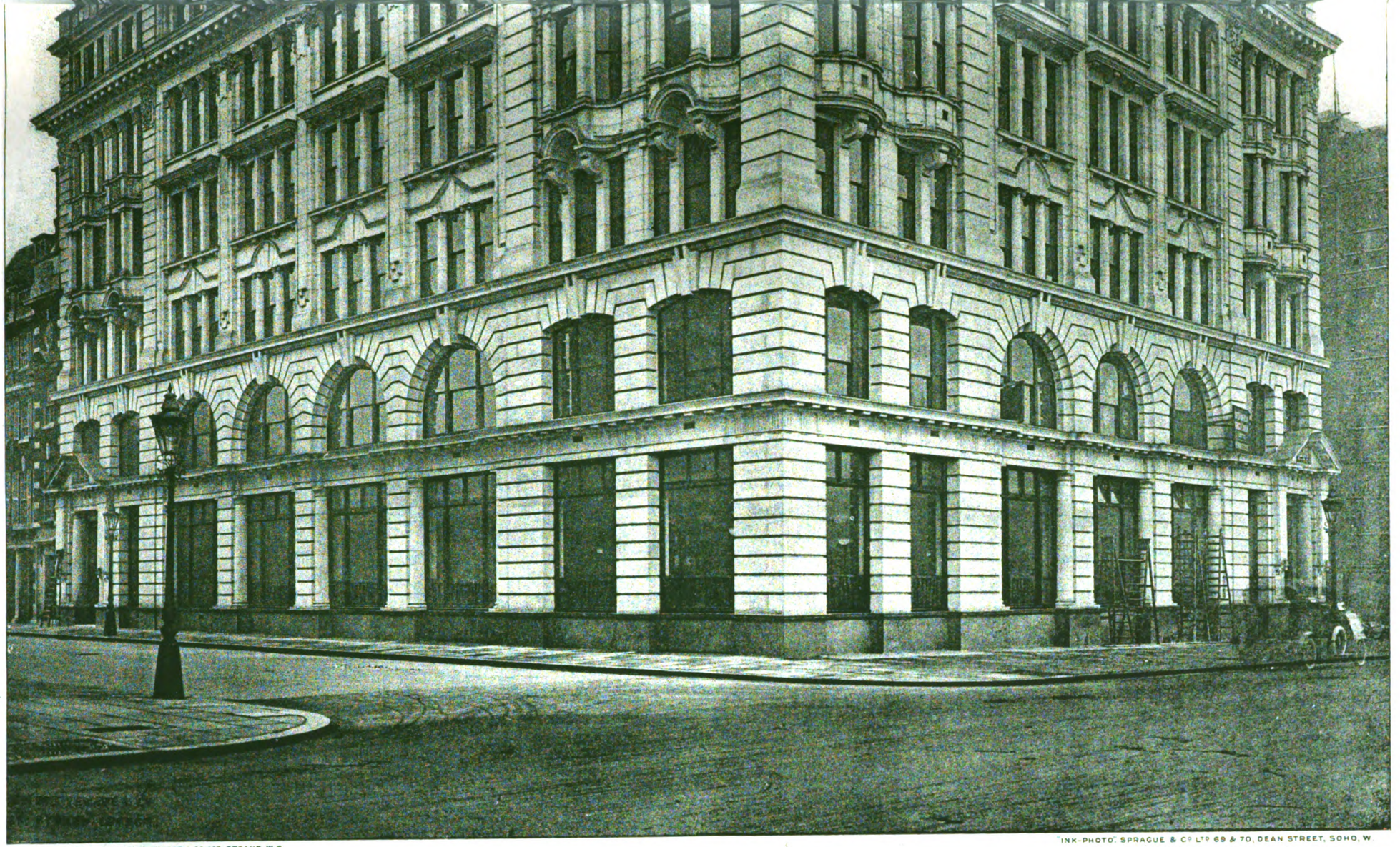
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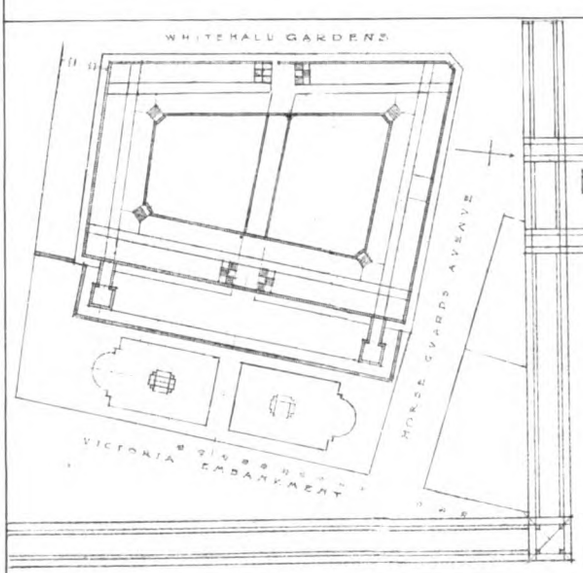
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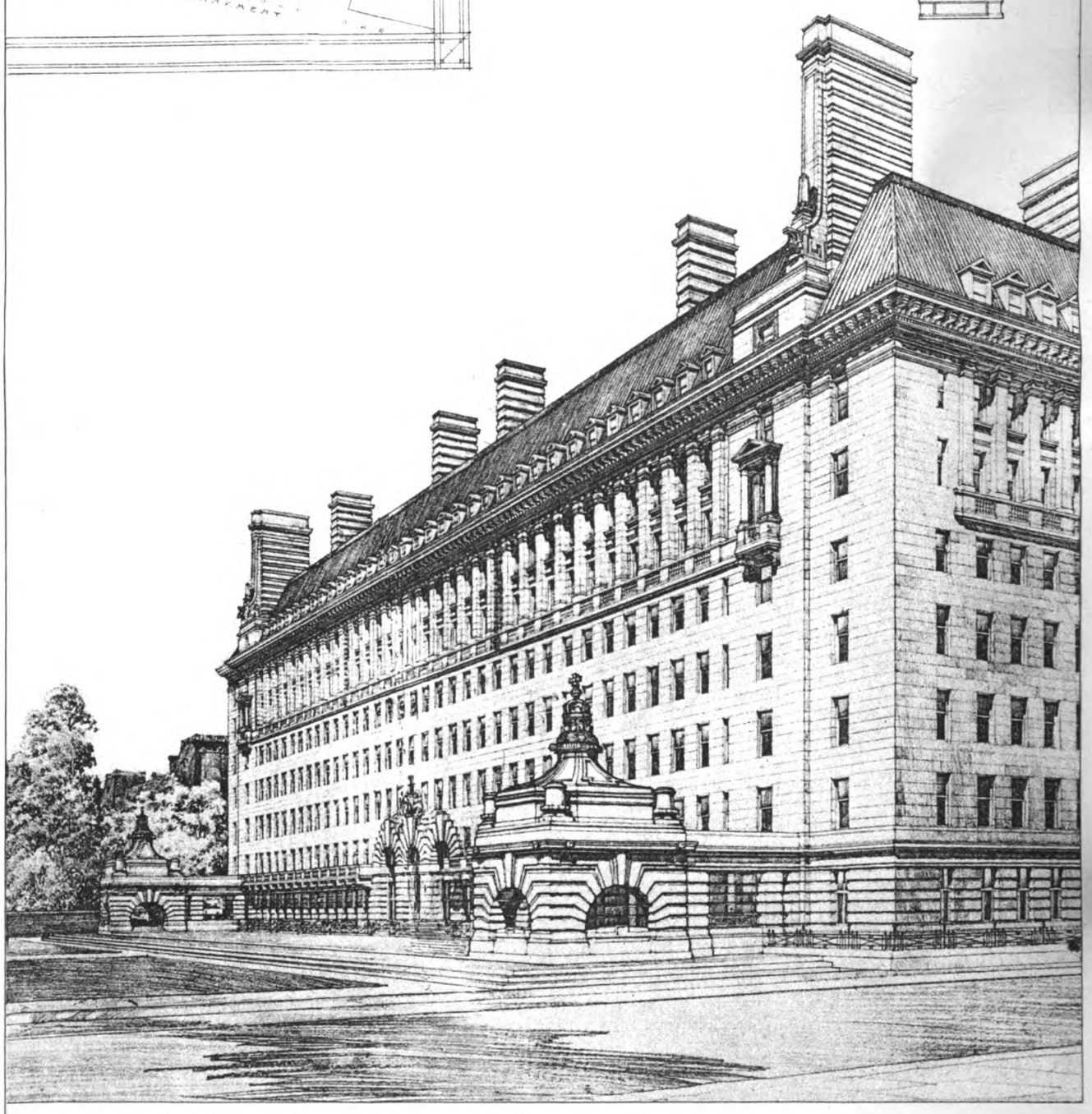
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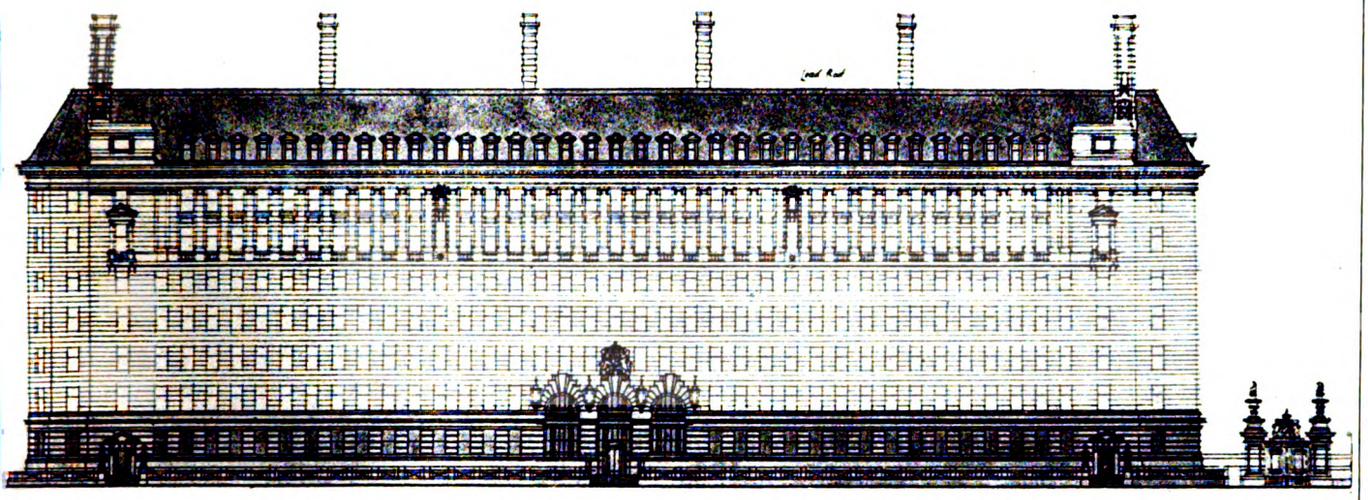
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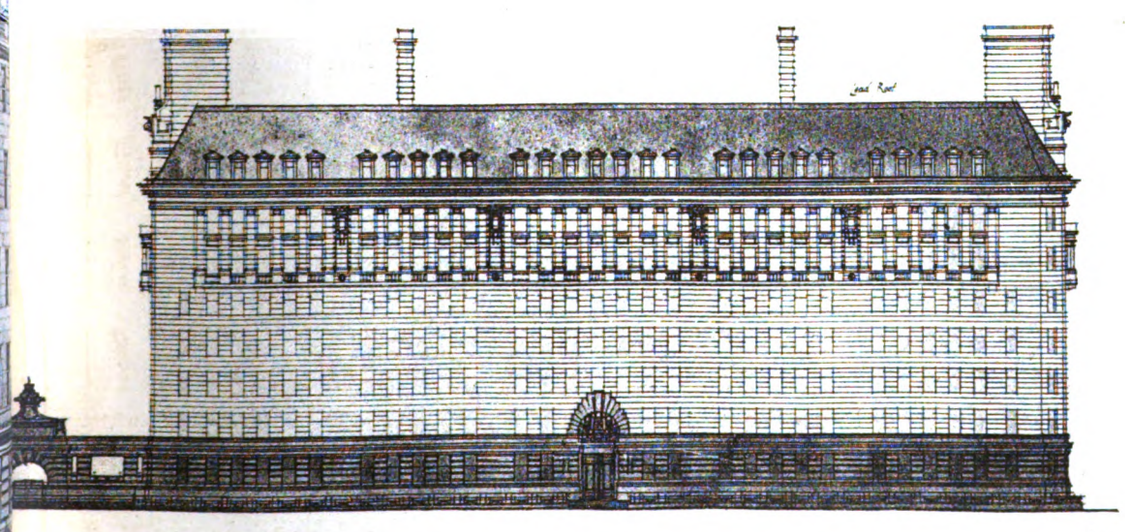


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WHITEHALL GARDENS FRONT.

Scale of feet.

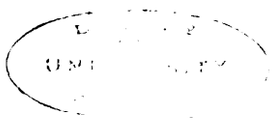


HORSEGUARDS-AVENUE FRONT.

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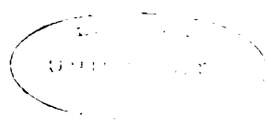
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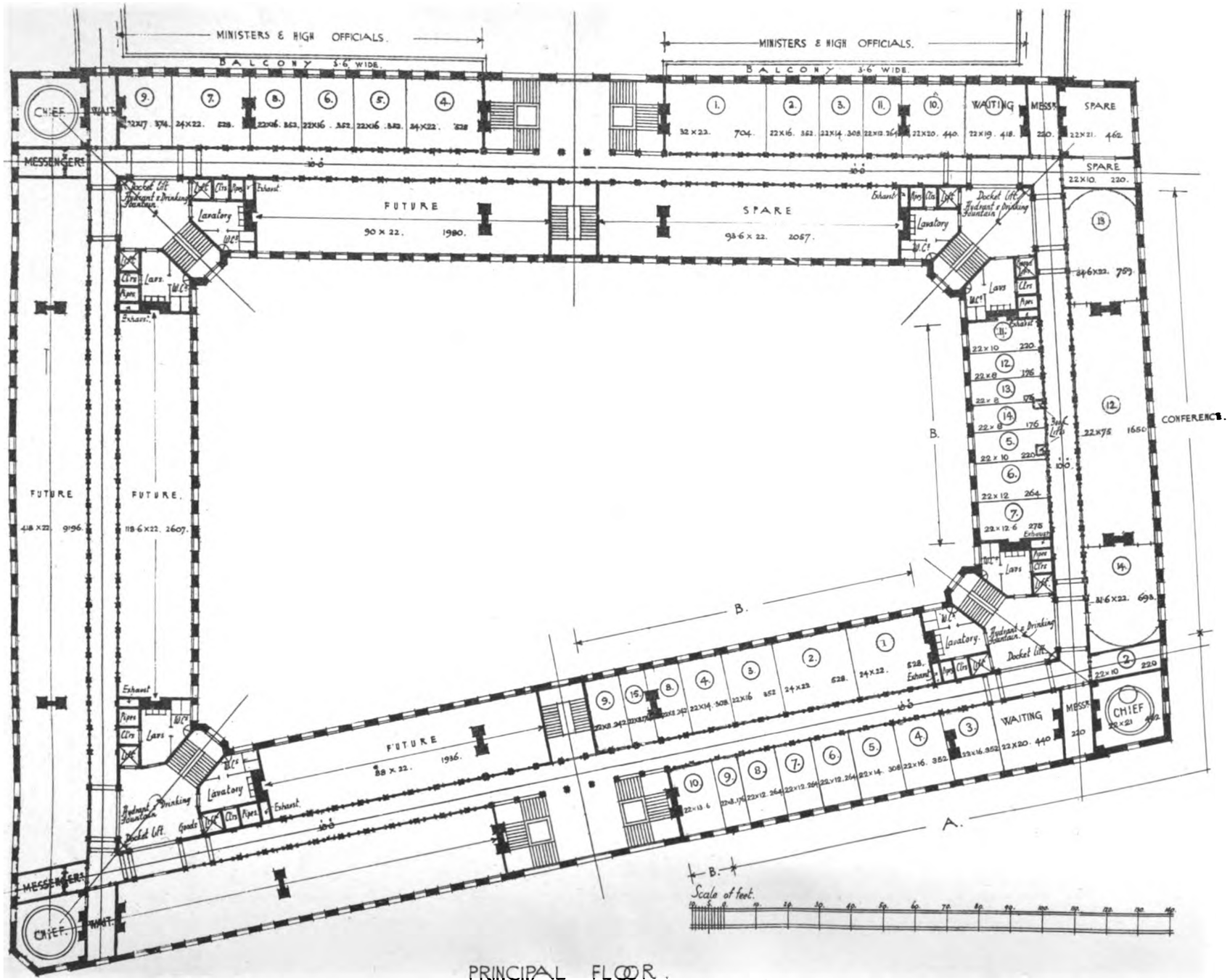
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"SPARE" ON THIS FLOOR, TO BE USED TEMPORARILY TO HOUSE ROOMS SHEWN IN FUTURE.

PRINCIPAL FLOOR.

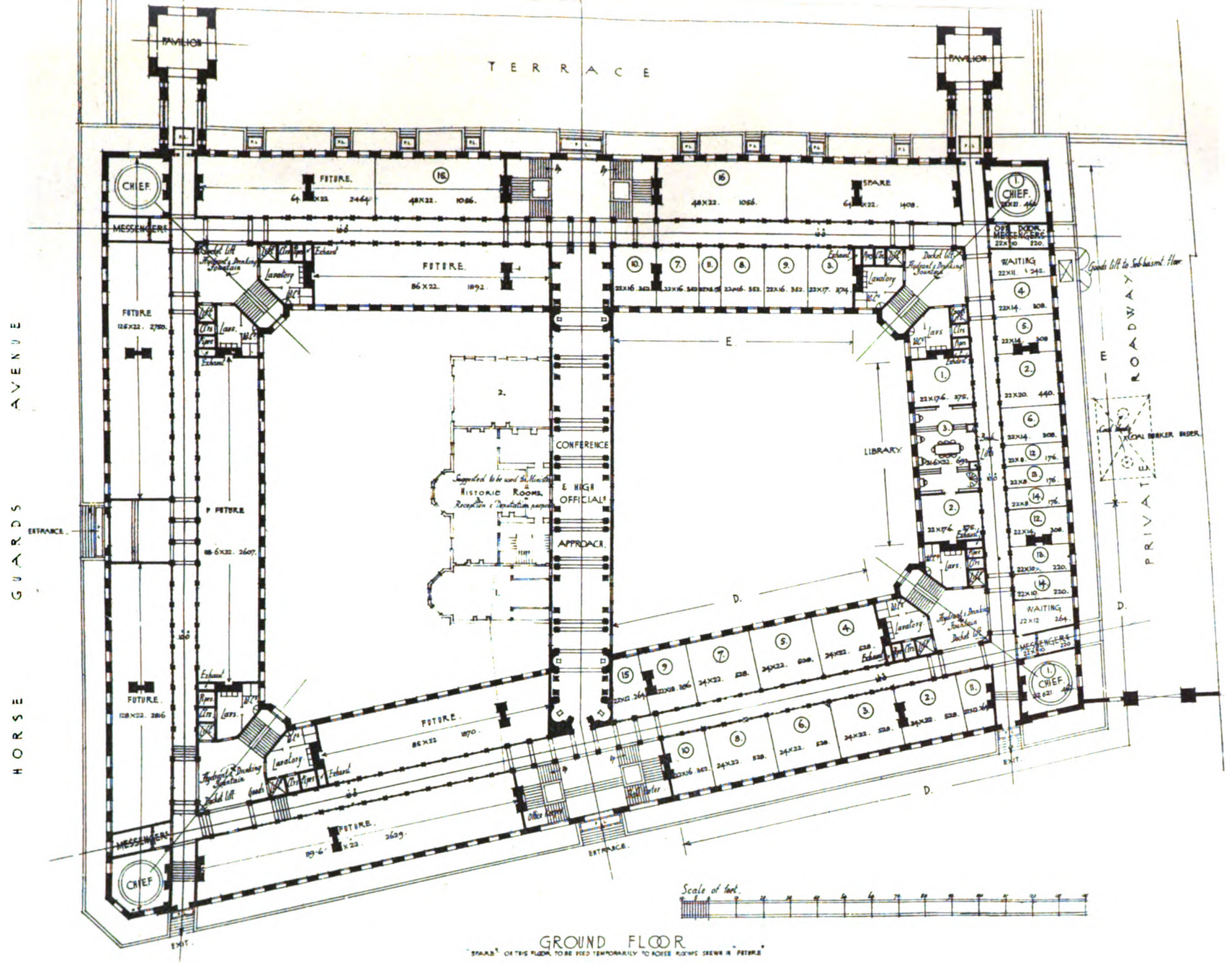
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Area allocated to 1st portion 16731
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Conference	3784
Spare	3780
Department A	2922
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Passengers	440
Waiting	440
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used to take it about with him as a specimen of his work. The brush work is very dexterous, much more so than in most of his portraits.

Both Ruebens and Van Dyck adopted the pernicious practice of making use of pupils and assistants.

Here is a contemporary account of Van Dyck's usual routine:—

"He never worked longer than one hour at a time on each portrait. When his clock told the hour he rose and made a bow to the sitter, as much as to say that enough was done for that day; after which his servant came to prepare fresh brushes and palette, while he received another person to whom he had given an appointment.

"After having lightly sketched the face, he put the sitter in an attitude that he had previously meditated, and with grey paper and black and white crayons he drew, in a quarter of an hour, the figure and drapery, which he arranged in a grand manner and with exquisite taste. He then handed over the drawing to skilful persons whom he had about him to paint it from the sitter's own clothes, which were sent on purpose at Van Dyck's request. The assistants having done their best with the draperies from Nature, he went lightly over them, and soon produced by his genius the art and truth which we there admire. As for the hands, he had in his employment persons of both sexes who served as models."

I need hardly point out the vices of this system. The marvel is that the work should be as good as it is, but in the last years of his life in England, to which the above description applies, he painted a number of very indifferent portraits. His earlier work during his stay at Genoa, when he probably painted his pictures himself, without much aid from assistants, is very much finer.

The next really important group of portrait painters is to be found in the great British School of the eighteenth century, when Reynolds, Gainsborough, and Romney were all painting at the same time. In their conception of portraiture this group was much influenced by Van Dyck. They had the same tendency towards a sort of courtly elegance, and they were much inclined to flatter their sitters. As painters of men I should judge them distinctly inferior to Van Dyck, but as painters of women much superior. Van Dyck, with all his elegance, never quite got the charm of womanhood—indeed, many of his female portraits are stiff and almost wooden.

But our three great painters had an extraordinary feeling for the grace and beauty of women and children. Never have they been more charmingly portrayed.

With regard to technique, Sir Joshua certainly aimed at reproducing the Venetian manner and colouring, and at his best he was very successful in so doing; but he was always making rash experiments, and was continually varying his practice, with often disastrous results to the permanence of his pictures.

Here is a description of his early practice by an amateur painter who was admitted to his studio:—

"On his light-coloured canvas he had already laid a ground of white, where he meant to place the head, and which was still wet. He had nothing on his palette but flake-white, lake, and black, and without making any previous sketch or outline he began with much celerity to scumble these pigments together till he had produced, in less than an hour, a likeness sufficiently intelligible yet withal cold and pallid to the last degree; at the second sitting he added, I believe, to the other colours a little Naples yellow."

He must have used a fuller palette for the subsequent sittings, but that is not mentioned. It is mentioned that this particular picture "very soon faded, and soon after the forehead cracked, almost to peeling off, which it would have done long since had not a pupil repaired it."

This was in 1754. There is a letter of Sir Joshua's in 1770 describing his practice then, when he was forty-seven years old.

"I am established in my method of painting. The first and second paintings are with oil of copaiba (for a medium), the colours being only black, ultramarine, and white. The second painting is the same. The last painting is with yellow ochre, lake, black, and ultramarine, and without white, retouched with a little white and the other colours." In spite of his saying that he was established in his method of painting, he was continually altering it, but he kept to the main lines—a very cold and bluish preparation, corrected afterwards by warm glazes. As for medium, besides the oil of copaiba, he often used megilp (a mixture of oil and mastic varnish), and a varnish made by dissolving wax in Venice turpentine. He was very fond of this wax varnish, and frequently went over his pictures with it after they were finished.

I may add that he adopted Van Dyck's pernicious system of having a sort of picture manufactory. He had a big house in Leicester Square, with numerous rooms for his pupils, copyists, and drapery men. His pupils served also as models for hands and draperies. With the aid of his assistants he turned out his pictures at a surprising rate. In one year he produced 150 works—about half of what Gainsborough produced in the whole of his life. But Gainsborough had no manufactory—no assistants; his pictures were entirely the work of his own hands. Gainsborough's method was strikingly original. Here is an account by an eye-witness: "I was much surprised to see him sometimes paint portraits with pencils on sticks full six feet in length, and his method of using them was this: He placed himself and his canvas at a right angle with the sitter, so that he stood still and touched the features of his picture exactly at the same distance at which he viewed his sitter."

Velasquez is said to have tried this method of long brushes, but did not persevere with it. Gainsborough probably did. I think it is habitual in his later work. It gives a delightful sketchiness of execution, which sometimes degenerates into mere scratchiness. He made many preliminary sketches for his pictures, sometimes mere scribbles, but at other times fairly elaborate studies. For full-length portraits he would first make a small sketch of the figure in oils before beginning to work on the full-sized canvas. From this sketch he would lay in the complete figure with all its accessories, and then finish from the sitter.

As a portrait painter Gainsborough had many defects. He was not a good draughtsman; his figures are often very faulty in proportion, the hands are habitually badly drawn, and he had a peculiar way of representing eyes—he made them very expressive, but their form was distinctly not that of Nature; also there is rather a fatal family likeness in a good many of his female portraits. And the men's portraits are often flimsy and weak. But no painter has had a greater measure of that very elusive quality, charm. His portraits of women are the most charming in the world.

He was a very fine and original colourist, and a master of decorative arrangement. Altogether a most delightful painter, but with limitations.

There is a very interesting appreciation of Gainsborough's work by Reynolds in one of his discourses. He says: "It is certain that all those odd scratches and marks which on close examination are so observable in Gainsborough's pictures, and which even to experienced painters appear rather the effect of accident than design, this chaos, this uncouth and shapeless appearance, by a kind of magic at a certain distance, assumes form, and all the parts seem to drop into their proper places, so that we can hardly refuse acknowledging the full effect of diligence under the appearance of chance and hasty negligence. . . . His handling, the manner of leaving the colours—in other words, the methods he used for producing effect—had very much the appearance of the work of an artist who had never learnt from others the usual and regular practice belonging to his art."

Sir Joshua evidently felt that Gainsborough ought not to have been a good painter, but he had to acknowledge that he was one; indeed, he goes on to say: "It must be allowed that this hatching manner of Gainsborough's did very much contribute to the lightness of effect which is so eminent a beauty in his pictures."

As for Romney, I have been unable to find any contemporary record of his technique.

We will now consider Raeburn, who marks the transition from the eighteenth to the nineteenth century, and whose work has had a surprising vogue of late years. I think myself that Raeburn is a somewhat overrated painter; but he has had undoubtedly a great influence upon modern work. His method is essentially that of Franz Hals. It is extraordinarily direct and very masterly; but the characterisation is not nearly as good as that of Hals, and he mostly misses the extraordinary vivacity of expression that distinguishes the Dutch master.

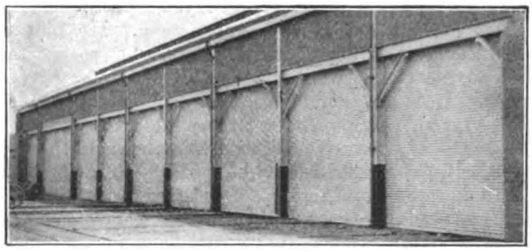
As in the case of the great painters of the eighteenth century, there is a strong family likeness in his portraits. There are one or two of very different gentlemen which seem almost identical. He was essentially a mannerist, although the manner was very strong and good. Fortunately we know something about his practice. Here are some notes

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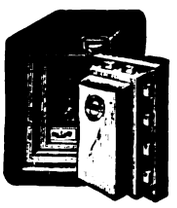
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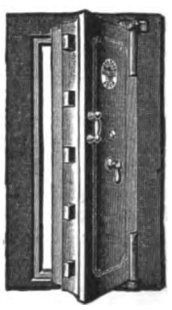
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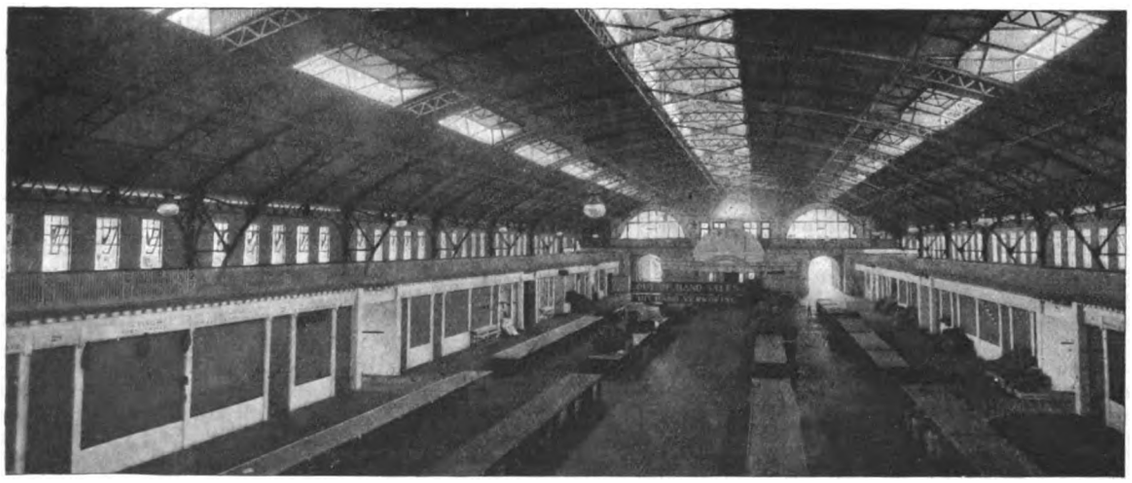
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collected by Sir Walter Armstrong in his monograph on Raeburn:—

1. He seldom kept a sitter more than an hour and a half or two hours.

2. He never gave more than four or five sittings to a head or bust portrait.

3. He did not draw in his subject first with chalk or charcoal, but directly with the brush on the blank canvas.

4. Forehead, chin, and mouth were his first touches.

5. He placed the easel behind the sitter and went away to look at the picture and sitter together.

6. A fold of drapery often caused him more trouble than the build and expression of a head.

7. He never used a maulstick.

From these notes we gather that Raeburn's method was singularly direct. He certainly made no kind of preparation. He aimed at putting every touch on the canvas as right in tone and drawing as he could get it. If he were successful in this it remained unmodified. If it were unsuccessful, it had to be redone. I do not think he repainted the whole head each time, as was Whistler's practice. If a touch was wrong, it was repainted firmly and solidly; if it was right, he left it alone. So that the finished picture is a sort of mosaic of definite touches, each of them apparently put on the canvas with one sweep of the brush. In his earlier works he carried this method so far that his faces look much too hard—as if they were cut out with a hatchet. Oddly enough, Raeburn's work did not become more summary as he grew older, as is the case with most artists. On the contrary, his modelling became much more subtle, and his touch softer and more fused—to the great improvement of his painting.

And now we come to the moderns. I have always considered Millais one of the greatest of modern painters, and I can speak with some confidence of his technique, as I had the privilege of his friendship, and he used to allow me to see him paint.

In life-sized portraits he always put his canvas side by side with the sitter, and walked backwards and forwards the whole length of his studio, putting on a touch, and then looking at it from a distance to see if it was right. If it was not right he would come forward again to modify it; this modification he often did with his finger.

He once said to me, "Get away from your picture till it looks the size of a postage stamp, and then you will see if it is right or not."

He did not draw his picture very elaborately, but he was careful how he put it on the canvas. Having made a rapid sketch of the general attitude, he got to work at once on the head with the full vigour of a rich palette, just rubbing in lightly a little of the background round it. At the end of the first sitting the head looked very much as it at the end of the final one; he only added accuracy and refinement to it. He was not very particular as to his execution; he wanted his painting to look like Nature, and he did not much care how he did it. As he said once, "It doesn't matter how beautifully a thing is painted, it's no good if it isn't right; it's got to come out. What does it matter how you do it? Paint with the shovel if you can't get your effect any other way."

Millais rather despised mere technique—that is, any very definite method of painting—possibly he despised it too much. Mr. Comyns Carr in his recent book, "Coasting Bohemia," relates how: "One day we were talking of technique, and I remember Millais, who was at the time in some trouble with a portrait that he could not get to his satisfaction, roundly declared that for an artist worth the name there was no such thing as technique. 'Look at me, now,' he said. 'I can't get this face right, and it has been the same with me all through my life; with every fresh subject I have to learn my art all over again.'" It was perhaps this absence of a definite technique which made Millais' work so very unequal, but it helped to give him his marvellous freshness and variety. Each portrait is absolutely individual, and has no trace of that fatal family likeness that we find in mannerists such as Raeburn.

A very different painter was Whistler—a man of great natural ability, but who was too much bound down to his method. He took immense pains, but his great preoccupation was to make people think that he did not take any. No matter how many sittings he had—and he generally had a great many—he always wanted his picture to appear as if it had been entirely painted at one sitting. So each time he went over his whole picture and repainted it afresh. As it is impossible adequately to paint a whole portrait at one sitting, he merely spoilt his work, and neglected the more valuable elements of portraiture in order to attain the quite secondary advantage of an agreeable sketchiness.

In other respects his method was sound enough, and had the merit of extreme simplicity. I have been given some very interesting notes as to Whistler's technique by a well-known artist who worked for some years in his studio.

"He puts the picture side by side with the sitter. The canvas had a grey preparation made with black and white mixed with turpentine. He did not use a palette, but had a table near him, on which he mixed the tones he was going to use. This was a very important part of his practice; before actually painting his picture he mixed with great care a quantity of the tones he would require, such as background colour, floor colour, coat-colour in the light, ditto in the half-tone, ditto in the shadow; flesh colour in the light, in the half-tone, and in the shadow; hair colour in the same way, &c. He had a mixture of oil and turpentine in a saucer standing on the table. Using this as a medium, he covered thinly the whole canvas with these prepared tones, using house-painters' brushes for the surfaces, and drawing lines with round hog's-hair brushes nearly a yard long. His object was to cover the whole canvas at one painting—either the first or the hundredth. When a thing was incomplete, he did not try to patch it; he did it all over again and again, till it was finished, or wrecked, as often happened, from the sitter getting tired or growing up or growing old.

"He would put the mixtures in little gallipots of water round the table, so that he could depend upon taking up the same tone another day.

"For many of his portraits he used a quite black background. He had a square of black velvet nailed on to an easel, which he wheeled about. The lighting was always subdued; his sitter posed far away in the penumbra of the studio, and never under a direct light. He said he hated high lights in a picture."

What was best in Whistler's practice was his intense preoccupation with the tones; and be it observed that these very delicate tones, that in his best work are so beautifully harmonious, are put on in the simplest possible way—just ordinary paints carefully mixed, and then put on thinly with a big brush. I think this is a sufficient refutation of the theory that "quality" in painting can only be obtained by broken colour, or by glazing, or scumbling, or other tricks. Whistler's work has a very fine quality, and it is obtained by the simplest possible means. If only he had not spoilt it all by his mania for repainting the whole picture each time, he might have obtained results not so very unworthy of Velasquez, whose method was also completely simple, but far more rational.

And now we come to the greatest of modern portrait painters, John Sargent. Sargent is like the old painters, in that he has a very definite method of which he is completely master. There is very little that is tentative about his work. He knows what he wants to do, and also how to do it—a quality which is very rare in modern art, where most of us are fumbling and bungling with no clear aim and no settled method.

As I have said, Mr. Sargent's work is undoubtedly founded on that of Franz Hals. It has the same quality of sureness of touch combined with great delicacy. In this, indeed, he excels his master; there is much more delicacy in Sargent's flesh tones and more refinement of drawing. Also he has a feeling for beauty in which Hals was almost lacking. But there is a vigour and a directness in the older master and a vivacity of expression that even Sargent does not always equal. I feel some diffidence in giving an account of Sargent's technique, as it does not come direct from himself. He wrote to me about it very kindly some years ago, and this is what he said: "As for describing my procedure, I find the greatest difficulty in making it clear to pupils even with the palette and brushes in hand and with the model before me, and to serve it up in the abstract seems to me hopeless. It is less a technical process than an order in which to proceed.

That is, he carries out the painting in a certain definite order. Of course, this order is very important, and I do not despair of elucidating it. Mr. Sargent has taught with great success in the Academy schools, and I have been given some notes of his procedure by one of his pupils, which I think are quite trustworthy. This was the procedure:

"First, a careful drawing of the masses of hair, face, collar, coat, &c., together with the correct placing of the subject on the canvas, with spots giving the exact location of the features. Secondly, using a large brush with plenty of paint, put in the tone and colour of the background as

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nearly correct as possible, letting the background well overlap the borders of the portrait. Thirdly, a kind of middle tone of the flesh is painted over the whole flesh space—light on the light side, dark on the dark side—painting the tone right into the background (background into flesh, flesh into background, until the effect of the truthful blending or melting of the one into the other is obtained); so with the hair and flesh and hair and background. When this is finished the head has something the appearance of a wig-maker's block. Of course, the drawing round the borders of the masses must be very thorough, not only in the pattern of its mass but in the coming and going of the edge—as true to Nature as it is possible to get it. The broadly graduated tone from the light side to the dark must be truthfully expressed. There are as yet no features. With the canvas arranged by the side of the sitter, and going to the full length of the studio, this preliminary painting is carefully tested from the point of view of drawing, colour, and tone.

"It is then carefully noted where the broad tones of the features should be placed in relation to all that has been done. The broad tone, in which may be said to dwell the eye, is then painted into the big middle tone while wet and fresh, being careful to have it right in colour, tone, and drawing, that on the light side differing from that on the dark side exactly as it is in Nature. It will then have the effect of a receding plane.

"As with the eyes, so with the nose—a kind of middle tint between the light and dark side to indicate its form and place; so with the nostrils, again with the mouth and chin, continually viewing the progress of the work from the far end of the studio.

"Then follow the various relationships in tone of the darks, subtly cast shadows and the like, vigorously brushed into the wet paint, and then the lights in their various relationships, until the whole appears to be true in tone.

"This would all be the first day's work. It is left to dry, and on resuming is oiled out carefully and well brushed with a dry brush to remove all superfluous oil.

"The whole picture is then thoroughly criticised, and the same ground gone over in much the same way, using as far as possible the work of the first painting by working thinly over it, never forgetting that the tones must be brushed fearlessly and well, the one into the other (sometimes the light into the dark, sometimes the dark into the light), so that the two fuse together and are felt as a continuation of the same substance."

To these notes I have an important addition by another student, viz., that at the end of the day everything should be brushed together whilst the paint is wet in order to get rid of all sharp edges. So that we are getting somewhat near to the indeterminate blur of Franz Hals—to be followed, of course, by the decided touches which, as Van Dyck said, give, as it were, the handwriting.

The method of Sargent is so predominant in modern art that most of our clever young painters seem to adopt it in some form or other—at least, those of them who have not degenerated into pure freakishness, of which there are, alas! far too many. It certainly has wonderful results in the hands of its originator, but it is a difficult method, and it has this danger—that the cleverness of the painting seems often to attract more attention than the rendering of the personality of the sitter. Indeed, the followers of Mr. Sargent are so desperately anxious to be clever that they often forget to be good. With many of them the method degenerates into mere pretentious sloppiness. Mr. Sargent is a genius, and a genius must go his own way; but those of us who have no genius (and there are still a few left) had better avoid the difficulties with which he plays so easily and so deftly.

THE death of Mr. John J. Smith, A.R.I.B.A., architect and surveyor, of Bideford, North Devon, occurred on Sunday, January 31. We understand that the practice is for disposal, together with office, dwelling-house, &c.

AT the R.I.B.A. general meeting last week the chairman, Mr. George Hubbard, F.S.A., Vice-President, announced that the Council proposed to submit to his Majesty the King the name of the Canadian architect, Mr. Frank Darling, as a fit recipient of the Royal Gold Medal for the current year. Mr. Darling is of the firm of Messrs. Darling & Pearson, of Toronto, examples of whose work were shown by Mr. F. S. Baker, F.R.I.B.A., among the slides illustrating his paper on "Canadian Architecture" read at the Institute two years ago.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CAMBRIDGESHIRE.

Cambridge.—Proposed Council mixed school, Coldham's Lane.

CORNWALL.

Tregoney.—Council school: additions. Mr. S. Hill, architect, Green Lane, Redruth.

CUMBERLAND.

Silloth.—Police Station. County architect.

DEVON.

Crown Hill.—Soldiers' Home (£2,400).

Plymouth.—Public school, Cobourg Street: rebuilding.

DORSET.

Holywell.—Proposed Council school.

DURHAM.

Chester-le-Street. — Fifty Council houses. Mr. J. Douglass, contractor (£10,360).

Edmondsley.—Council school (£5.350).

Frosterley.—Public elementary school.

ESSEX.

Benfleet.—Council school. County architect.

Burnham-on-Crouch.—Fire-engine and ambulance station.

Southchurch Beach.—Proposed Church of the Good Shepherd, Shaftesbury and Winter Avenues.

GLOUCESTERSHIRE.

Bristol.—Property in King's Square: adaptation as municipal lodging-house for women (£2,000).

St. Anne's Church: proposed parsonage, First Avenue, St. Anne's Park. Mr. A. Harford, architect, 38A Park Street. Messrs. T. Lovell & Sons, contractors, Park Row.

HEREFORDSHIRE.

Ledbury.—Joint hospital.

Leominster.—Proposed children's home, for B.G.

HERTFORDSHIRE.

Cheshunt.—Secondary school.

KENT.

Ashford.—Technical Institute: additions (£1,000).

Dover.—Terminus Hotel, the Pier.

Erith.—Oil Works, Belvedere: additions.

Ightham.—Six workmen's cottages, for Malling R.D.C.

Maidstone.—Lower Tovil Mill: laboratory, for Messrs. H. Allnutt & Son.

Warehouse, &c., Tonbridge Road, for Mr. S. Ashby.

LANCASHIRE.

Accrington.—Moor End Council school, Oswaldtwistle (£10,000). Mr. H. Littler, County architect, 16 Ribblesdale Place, Preston.

Ashton-under-Lyne.—Proposed public elementary school, off Mossley Road (£12,000).

Bolton.—The "Prince William" Hotel, Bradshawgate: alterations.

Hotel, Settle Street, for Messrs. J. Sharman & Son.

Two houses, Quebec Street, for Mr. J. Owen.

No. 124 Bradshawgate: alterations, for L. and Y. Railway Company.

Stabling at Top-o'-th' Height Farm, for Mr. R. Seddon.

Electricity sub-station, Bradshawgate. Mr. W. Gornall, contractor, 111 Ellesmere Street.

Bury.—Girls' Home, Chesham Mount, for B.G. Mr. A. Hopkinson, architect, 15 Agur Street.

Manchester.—One hundred and twenty flats, the Temple Estate, Cheetham Hill, for the Corporation.

Wigan.—Public elementary school, Leader Street, Pemberton.

LEICESTERSHIRE.

Desford.—Twenty workmen's houses. Mr. E. C. P. Monson, F.R.I.B.A., architect, Finsbury Pavement House, London.

MIDDLESEX.

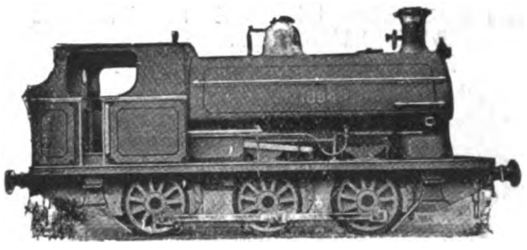
Harrow-on-the-Hill.—Council school, Greenhill Crescent. Mr. H. G. Crothall, architect, Guildhall, Westminster, London.

Hendon.—Council school, Hale Grove Gardens, Mill Hill.

MONMOUTHSHIRE.

Pengam.—Six houses, Pengam and Waunborfa Roads, for Mr. W. S. Martin.

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CATALOGUES, QUOTATIONS, SAMPLES ON APPLICATION.

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ENGLAND—*continued.*

NORTHUMBERLAND.

Berwick-on-Tweed. — Council dual secondary school (£16,000).

NOTTINGHAMSHIRE.

Carlton.—Proposed County Council school.

Southwell.—Workhouse: infirmary (£8,000).

SHROPSHIRE.

Ifton Heath.—Council School: domestic subjects' Centre.

Ludlow.—Twenty-two workmen's dwellings (£4,620).

SOMERSET.

Basonbridge.—Housing, for Bridgwater R.D.C. (£700).

Midsomer Norton.—Infants' Council school for 120 places.

STAFFORDSHIRE.

Burslem.—Dalehall Works: additions. Messrs. R. Scrivener & Sons, architects, Howard Place, Hanley.

Great Wyrley.—Eight houses, Walsall Road, for Messrs. Benniston & Jones (of Heath Hayes).

Lower Penn.—Sanatorium, for the Staffordshire, Wolverhampton and Dudley Joint Tuberculosis Committee.

SUFFOLK.

Brantham.—Six houses, for Sanford R.D.C.

SURREY.

Croydon.—Ten houses, Craigen Avenue, for Messrs. Paish, Tyler & Crump.

Eight houses, Grange Road; also house, Hythe Road, for Mr. H. Harrison.

Infants' Council school, Church Lane, Beddington.

Guildford.—The "Dolphin" P.H., Chertsey Street: rebuilding, for Hodgson's Kingston Brewery Company.

WARWICKSHIRE.

Coventry.—Frederick Bird Council School: enlargement. Messrs. W. Crane, Ltd., contractors, 80 Forest Road (£4,697).

Hatton.—County Asylum: house for Assistant M.O. (£1,150).

Nuneaton.—Proposed mortuary, &c (£590).

YORKSHIRE.

Baildon.—Parish Church: institute.

Earby.—Police Station.

Fulford.—Twenty-eight tramwaymen's cottages, for York Tramways staff (£7,000). Messrs. W. Birch & Sons, Ltd. (of York), contractors.

Greetland.—Fifteen houses and a shop, St. John Street. Messrs. R. Horsfall & Son, architects, 22A Commercial Street, Halifax.

Lealholm.—Two houses. Mr. A. E. Young, architect, 77 Baxtergate, Whitby.

York.—Motor-omnibus garage (£500).

Weights and Measures Office, Friarsgate. Messrs. W. Birch & Sons, Ltd., contractors.

WALES.

Abercwmboi.—Business premises, John Street. Mr. T. Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

Dolgelley.—Council school.

Glyncorrwg.—Proposed smallpox hospital.

SCOTLAND.

Arbroath.—The Inch Mill: hackling shop, for Messrs. Lowson, Ltd. Mr. A. A. Symons, A.R.I.B.A., architect, Brothock House.

Clydebank.—Works, Dalmuir: extension, for Messrs. W. Beardmore & Co. (£10,000).

Dumfries.—Board School, George Street: addition (£1,700).

Dumfries and Galloway Royal Infirmary: reconstruction for 102 beds (£2,360).

Dundee.—Garage, Craigie Avenue, for Mr. J. A. G. Batchelor.

House, East Dock Street, for Messrs. Mutter, Howey & Co.

Dunfermline.—Central supplementary school.

Glasgow.—120 workmen's cottages, Riddrie (£30,000).

Inveresk.—Elementary school; also grammar school addition (£11,000).

Irvine.—Three cottages (£1,100), for Mr. R. Caldwell.

IRELAND.

Ashford (Co. Wicklow).—Church. Mr. P. Munden (of Dublin), architect. Mr. P. Kinlen (of Rathgar), contractor.

Bangor (Co. Down).—House, Maxwell Road. Mr. J. St. J. Phillips, A.R.I.B.A., architect, Scottish Temperance Buildings, Belfast.

Belfast.—Stores, Henry Street. Mr. W. J. Gilliland, F.R.I.B.A., architect, 9 Howard Street.

Carrickfergus.—Public theatre, North Street.

Largan.—House, Windsor Avenue. Messrs. Hobart & Heron, architects, Scottish Provident Buildings, Belfast.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Some Work of Thomas H. Mawson.

SIR,—Your correspondent Mr. James Crossland has so evidently lost his temper over my review of his master's work that I should not trouble to notice his letter but for some misstatements. First, his statement that my article "implies that Mr. Mawson has left his proper sphere as a garden designer to dabble in town planning" is quite incorrect. I am aware that Mr. Mawson is still a garden designer. The fact of his being so is no bar to his being also a town-planner, nor, as Mr. Crossland seems to think, any slur on his ability in the latter capacity.

With regard to the Exeter scheme, I do not make the assumption with which Mr. Crossland credits me. I gather from the report on the scheme that a slum clearance was already determined when Mr. Mawson started his plan, and that he has extended the area to be cleared. In this my article is explicit that I think he has acted wisely. I am afraid Mr. Crossland is reading into my words local criticisms of his master's scheme which I have not expressed or suggested.

Mr. Crossland is quite entitled to the opinion that I ought to know more of Canada than I do. Perhaps the same may be said of most Englishmen. But although I have not seen the whole of Canada, I have been there and I know something of its conditions. Knowing what I know, I still hold to my opinions on Mr. Mawson's Ottawa scheme.

The most erroneous, as well as the most absurd, of Mr. Crossland's misstatements is that my final paragraph is an "effort to prevent the firm"—for which he works—"ever getting any more town planning to do." I can understand Mr. Crossland's loss of temper if he fancied that such a result would ensue. But my whole position is that Mr. Mawson's work is worthy of the attention of town-planning students, and my caution to them is that they cannot learn all about town planning from the reports in question. To a certain extent Mr. Crossland confutes me by giving away the show, and letting out the fact that the firm for which he works did not furnish estimates of the cost of their schemes, which are therefore, so far, purely academic studies.—Yours faithfully,

THE WRITER OF THE ARTICLE.

Loot from Louvain?

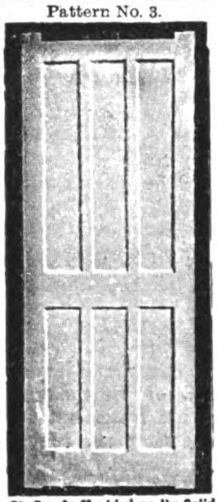
SIR,—I have read in one of the dailies of the 3rd inst. that besides the great painting in the Cathedral at Ghent having been despatched, among other loot from Belgium, to the Museum at Berlin, where it now hangs complete, the valuable illuminated manuscripts, if not the library books as well, of Louvain University are probably there too—sent off before the sacking and burning of the town.

The statement would seem almost too good to be true; but if it should turn out to be a fact, then there is only the constructional loss of the building to deplore in connection with it, though the venerable rector was deliberately murdered along with several professors and priests of the town separately from the wholesale butchering of the fleeing population by the wine-sodden, undisciplined, armed rabble. If the treasures have not perished in the flames they will have to be returned to the University authorities at the signing of peace, but the precious lives can never be handed back.—Yours faithfully. JOHN A. RANDOLPH.

WE regret to announce the death of Mr. W. J. Cutbill, chairman of Claridge's Patent Asphalte Company, Ltd., which occurred on the 27th ultimo. It seems only a few weeks ago that Mr. Cutbill was prominent in a reception given by the company to inaugurate their new offices at 3 Central Buildings, Westminster, S.W.

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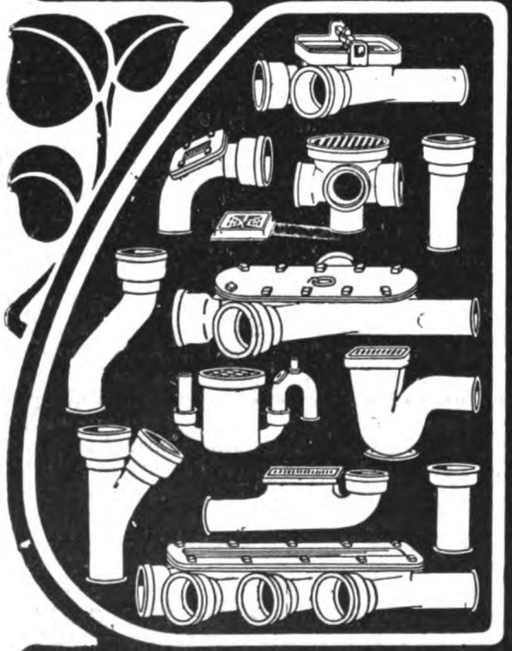
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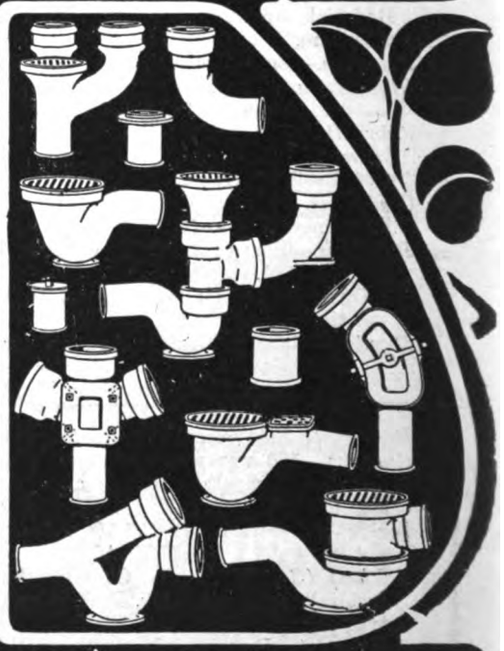
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THE
Architect and Contract Reporter.
FRIDAY, FEBRUARY 12, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1s., which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive sketch plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

CONTRACTS OPEN.

ABERGAVENNY.—Feb. 16.—For alterations and additions to the Abergavenny police court and station, for the Monmouth County Standing Joint Committee. Deposit £1 1s. Mr. W. Tanner, F.S.I., county surveyor, Newport, Mon.

ASHFORD (MIDDLESEX).—Feb. 18.—For erection of a swimming bath, transforming existing swimming bath and spray baths and fixing new steam main, for the Managers of the West London District School—viz.: Building contract—comprising the construction of swimming bath with a pond 60 feet by 20 feet., and structural alterations to existing baths; engineering contract—comprising erection of fittings for spray baths and new steam main from boiler-house. Mr. H. Dighton Pearson, F.R.I.B.A., 76 Newman Street, Oxford Street, W.

BAKEWELL.—Feb. 15.—For the wood and iron work in connection with the erection of sheds, pens, and selling ring in the cattle market, for the Urban District Council. Mr. V. R. Cockerton, clerk, Bakewell.

BARNSLEY.—March 4.—For erection of a new Town Hall in Church Street. Deposit £2 2s. Mr. W. P. Donald, Town Clerk, Town Clerk's Office, Barnsley.

BEESTON.—Feb. 17.—For erection of pumping station, destructor, office and mess room, &c., on the sewage disposal site at Beeston, Notts, for the Beeston Urban District Council. Deposit £2 2s. Mr. W. H. Radford, C.E., engineer, Albion Chambers, King Street, Nottingham.

BRIGHTLINGSEA.—Feb. 24.—For the alterations to be carried out at the Wesleyan day school during the Easter holidays, for the Trustees. Rev. F. Rabey, The Manse, Brightlingsea, Essex.

BOURNEMOUTH.—Feb. 19.—For extension of Bournemouth head post office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The Postmaster, Bournemouth, and H.M. Office of Works, &c., Storey's Gate, S.W.

BURSLEM.—Feb. 15.—For erection of a six-oven manufactory, North Road, for Messrs. S. Johnson, Ltd. Also for erection of six ovens. Deposit £5 5s. Messrs. Wood & Goldstraw, A.R.I.B.A., architects, Tunstall and Hanley.

CHRISTCHURCH.—Feb. 27.—For erection of a mortuary at their premises, Fairmile House, for the Guardians. Deposit £5. Mr. A. Druitt, clerk, Board Room, Fairmile House, Christchurch, Hants.

CRAGHEAD.—For erection of seventy houses at Craghead, for Messrs. Thomas Hedley & Bros. Deposit £2 2s. Mr. J. M. Rounthwaite, A.R.I.B.A., 13 Mosley Street, Newcastle-on-Tyne.

DURHAM.—Feb. 20.—For alterations to the laundry at the workhouse, Crossgate, for the Guardians of Durham Union. Deposit £1 1s. Messrs. W. & T. R. Milburn, FF.R.I.B.A., architects, 19 Fawcett Street, Sunderland.

EDMONTON.—Feb. 24.—For erecting and finishing fit for use an additional storey over the Board-room block and certain alterations to same at Edmonton House, Bridport Road, Upper Edmonton, for the Guardians of Edmonton Union. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

FLAX BOURTON.—Feb. 20.—For erection of six cottages at Flax Bourton, for the Somerset County Works Committee. Mr. E. Stead, A.M.I.C.E., county surveyor, Wells.

HEMSWORTH.—Feb. 19.—The West Riding Education Committee invite whole or separate tenders for the following works in connection with additional classrooms at the Hemsworth Kinsley Council School—viz.: Builder, joiner, slater, plumber, plasterer, painter. The Education Architect, County Hall, Wakefield. Send £1 deposit by separate letter to the West Riding Treasurer, County Hall, Wakefield.

HUDDERSFIELD.—Feb. 17.—For erection of a weaving shed at Marsh Mills. Messrs. J. Berry & Sons, architects and surveyors, 3 Market Place, Huddersfield.

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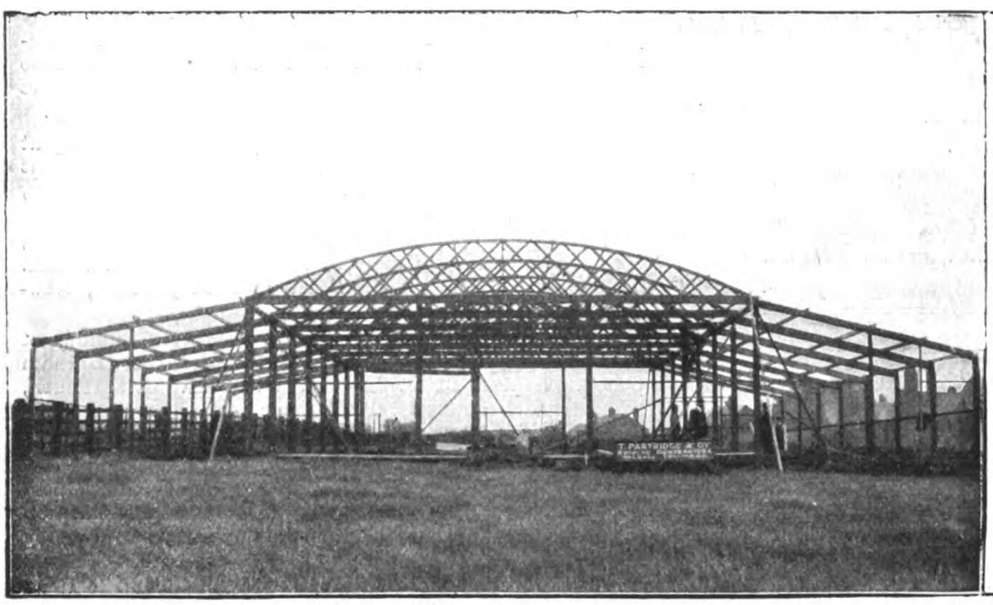
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HUDDERSFIELD.—Feb. 25.—For proposed children's pavilion, to be erected by the Corporation at Bradley Gate, for the executors of the late John Sykes, J.P. Various trades as follows: (1) Mason and bricklayer (no drains, walks, or roadways); (2) concretor; (3) joiner and carpenter; (4) plumber, electrician, and heating; (5) plasterer; (6) slater; (7) painter. Mr. W. Cooper, F.R.I.B.A., architect, 4 Kirkgate Buildings, Huddersfield.

IRELAND.—Feb. 17.—For erection of a caretaker's house at Upper Falls sewage works, for the Belfast Rural District Council. Mr. R. G. Jackson, clerk, Workhouse, Belfast, or Mr. W. D. R. Taggart, C.E., Scottish Provident Buildings, Belfast.

IRELAND.—Feb. 25.—For construction of 50,000-gallon concrete water tank at engine shed, Broadstone Station, for the Midland Great Western Railway of Ireland Company. Charge 2*s.* 6*d.* Mr. W. Purcell O'Neill, chief engineer, Broadstone Terminus, Dublin.

KNOTTINGLEY.—Feb. 16.—For erection and completion of house, shop, and work-rooms at Hill Top, for Mr. W. H. Higgins. Send applications by Feb. 16 to Mr. W. J. Tennant, architect and surveyor, Pontefract.

LEEDS.—Feb. 17.—For the following contracts in connection with the Cookridge Street Baths, for the Sub-Property (Baths) Committee—viz.: Erection of a boiler-house, chimney, and boiler seating; supplying and fixing No. 1 24 feet by 7 feet Lancashire boiler complete. Mr. W. T. Lancashire, city engineer, Leeds.

LEEDS.—Feb. 17.—For bricklayer and masons', carpenter and joiners', plumbers', slaters', plasterers', concretors', smith and ironfounders', painters', heating engineers', and electric work required in connection with the erection of proposed infants' school, Hough Lane, Bramley, for the Leeds Education Committee. The Education Department (Architect's Section), Education Offices, Calverley Street, Leeds.

LONDON.—Feb. 24.—For extending the washing shed at the Mead Ambulance Station, Carnwath Road, Fulham, S.W., for the Metropolitan Asylums Board. Deposit £1. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the office of the Board, Embankment, E.C.

MANCHESTER.—Feb. 18.—For extensions and alterations to the golf pavilion at Heaton Park, for the Parks Committee. Deposit £1 1*s.* The City Architect, Town Hall, Manchester.

MANCHESTER.—Feb. 24.—For erection of a children's hospital on their estate at Withington, for the South Manchester Board of Guardians. Deposit £1 1*s.* Mr. F. H. Overmann, F.M.S.A., 49 King Street, Manchester.

NEWARK.—Feb. 20.—For the following works in connection with the Gilstrap free public library, for the Committee: (1) Heating apparatus; (2) book stacks; (3) altering book stacks, &c.; (4) making open access, charging desk, and removing screen, &c.; (5) gas fittings; (6) floor covering; (7) alterations in reading room. The Borough Librarian, Newark.

NEWBRIDGE.—Feb. 16.—For alterations and additions (including billiard-hall and garage) to Bridge Buildings, Newbridge, Mon., for Mr. G. Williams. Messrs. Johnson, Richards & Jones, architects, Abergavenny.

NORTHWICH.—Feb. 17.—For the enlargement and alterations of the White House, for the Guardians. The Master of the Workhouse, Northwich.

NORWICH.—Feb. 17.—For erection of a pair of children's homes, for the Guardians. Deposit £1 1*s.* Messrs. Morgan & Buckingham, architects and surveyors, 1 Upper King Street, Norwich.

PLYMOUTH.—Feb. 15.—For alterations and repairs to 5 Moon Street, for the Corporation. Mr. J. Paton, borough engineer and surveyor, Municipal Offices, Plymouth.

ST. HELENS.—Feb. 23.—For erection of a refuse destructor, together with all contingent works, at the Parr Depôt, within the borough. Deposit £2. Mr. A. W. Bradley, M.Inst.C.E., borough engineer, Town Hall, St. Helens.

ST. MAWES (CORNWALL).—Feb. 16.—For erection of four dwellings for working classes at St. Just Lane, near St. Mawes, for the Truro Rural District Council. Mr. C. Hancock, clerk, 12 Princess Street, Truro.

SAXMUNDHAM.—Feb. 18.—For supplying the requisite materials for and carrying out proposed alterations and additions to premises in Rendham Road, to adapt the same for purposes of a fire-engine station and storage depôt, for the Urban District Council. Mr. C. J. Cook, clerk, Saxmundham.

SCOTLAND.—Feb. 17.—For the following works required in connection with the proposed erection of one tenement of dwelling-houses in College Street, for the Glasgow City Improvements Department—viz.: (1) Digger, mason, and brick works; (2) carpenter, and joiner works; (3) slater work; (4) plumber and gasfitter works; (5) plaster work; and (6) painter work. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—Feb. 17-24.—For the brick and mason, carpenter and joiner, slater, plasterer, plumber, electric lighting, and painter works of (1) additions to administrative buildings; (2) new tuberculosis hospital to be erected at Heathfield Hospital, Ayr, for the Corporation. Tenders must be lodged for No. 1 by 9.30 A.M. on Feb. 17, and for No. 2 by 9.30 A.M. on Feb. 24. Mr. J. Young, burgh surveyor, Town Buildings, Ayr.

SCOTLAND.—Feb. 18.—For the extension of Dumbarton Post Office, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work and not for separate trades. Deposit £1 1*s.* The Clerk of Works, H.M. Office of Works, H.P.O., Glasgow, and H.M. Office of Works, 3 Parliament Square, Edinburgh.

SCOTLAND.—Feb. 20.—For the brick, steel, cement, and plaster, plumber, asphalt, carpentor, and painter and glazier works of steel-framed factory at Stoneywood Works, Bucksburn, for Messrs. Alex. Pirie & Sons, Ltd. Tenders either for any one of the foregoing works or for the whole thereof in one contract. Messrs. Jenkins & Marr, civil engineers and architects, 16 Bridge Street, Aberdeen.

SCOTLAND.—March 1.—For the manufacture and driving of about 700 reinforced-concrete piles, together with other contingent works, comprising the foundations of the New City Hall, Dundee, for the Dundee Town Council. Deposit £1 1*s.* The City Architect, City Chambers, Dundee.

SELBY.—Feb. 18.—For all or any of the various works required in erection of workmen's dwellings, for the Yorkshire Dyeware and Chemical Company, Ltd., Canal Works. Messrs. J. Firth & Son, architects, Vulcan Road, Dewsbury.

SHEFFIELD.—Feb. 25.—(Contract No. 134.) For building extension of engine-room, boiler-house, new switch-rooms, and stores at the Neepsend electric power station, for the Electric Supply Committee. Deposit £5 5*s.* Mr. S. E. Fedden, M.I.C.E., M.I.M.E., general manager, Commercial Street, Sheffield.

SOUTH MOOR.—For supply of sixty-eight houses at South Moor, for the South Moor Colliery Company, Ltd. Deposit £2 2*s.* Mr. J. W. Rounthwaite, A.R.I.B.A., 13 Mosley Street, Newcastle-on-Tyne.

STOCKPORT.—March 1.—For erection of a refuse destructor, including destructor house, furnaces, auxiliary plant, &c., at Heaton Lane, within the borough. Deposit £2 2*s.* Mr. J. Atkinson, A.M.I.C.E., borough surveyor, Town Hall, Stockport.

STOKE-ON-TRENT.—Feb. 25.—For the reconstruction of a portion of the roofing at the Hanley Baths, for the Corporation. The Borough Surveyor, Town Hall, Stoke-on-Trent.

TREDEGAR.—March 15.—For erection of a caretaker's lodge at the new cemetery, Cefn Golen, for the Tredegar Urban District Council. Mr. W. Lloyd Roach, surveyor to the Council, Bedwellty House, Tredegar.

WARRINGTON.—Feb. 16.—For alterations and additions to the sanatorium at Sankey, for the Health Committee. Deposit £2 2*s.* The Borough Surveyor, Town Hall, Warrington.

WALES.—For erection of sixty semi-detached houses, together with new street, drains, &c., Duffryn Rhondda, for the Imperial Cottage Society, Ltd. Messrs. Johnson & Richards, architects, Merthyr.

WALES.—Feb. 18.—For erection of a house at Resolven, for Mr. Howell Rees. Messrs. S. Cym. Jones & Arnold, architects and surveyors, Neath.

WALES.—Feb. 19.—For erection of a secondary school at Ferndale, for the Rhondda Urban District Council. Mr. J. Rees, architect, Hillside Cottage, Pentre. Send £2 2*s.* deposit to the Accountant, the Council Offices, Pentre.

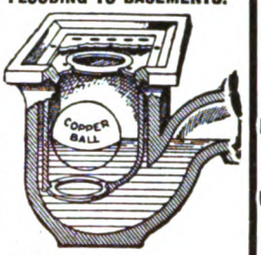
WALES.—Feb. 20.—For altering the premises of the Old Metropolitan Bank, Cardigan, for Mr. E. S. Watts. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

WALES.—Feb. 23.—For alterations and additions to medical hall, Cardigan, for Mr. H. Morgan. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

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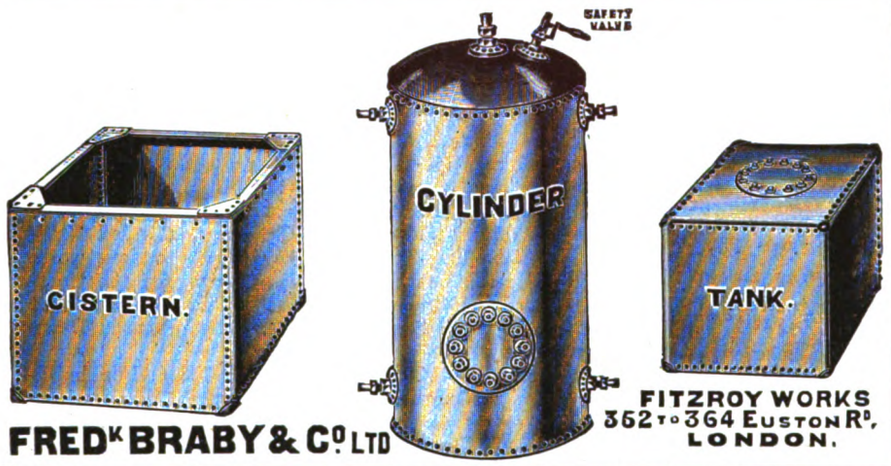
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TENDERS.

BIDEFORD.

For the erection of children's homes on Handy Cross site, for the Guardians.

Ellis & Sons	£1,289	0	0
Woolway & Son	1,150	0	0
Ridge	1,117	0	0
Shute	1,117	0	0
Glover & Son	1,098	0	0
Taylor & Co.	1,080	0	0
A. Lee, Bideford (*accepted*)	987	0	0

BRIGG.

For the erection of twelve artisan dwellings at Goxhill, for the Rural District Council.

Gilbert & Hall, Nottingham (*accepted*)	£2,237	0	0

For the erection of twelve artisan dwellings at South Killingholme, for the Brigg Rural Council.

Gilbert & Hall (*accepted*).

CHESTERFIELD.

For works in connection with the laying out of the Boythorpe Burial Ground, for the Chesterfield and Taplow Burial Acts Joint Committee. Contract 1, erection of buildings, fence, &c.; Contract 2, road making, drains, and water supply.

Contract 1.

Marsden Bros. (*accepted*)	£3,398	0	0

Contract 2.

W. W. Bateman (*accepted*)	£225	13	7

CHESTER-LE-STREET.

For the erection of fifty houses, for the Urban District Council.

J. Douglass, Newcastle (*accepted*)	£10,360	0	0

DERBY.

For additions to the administrative block at the Borough Mental Hospital, Rowditch. Mr. J. Ward, M.I.C.E., borough surveyor.

R. Weston & Sons, Derby (*accepted*)	£428	19	3

EBBW VALE.

For the erection of thirty-eight houses, for the Woodside Building Club. Mr. S. Taverner, architect, Newport.

Clarke	£10,408	0	0
Morgan	9,780	0	0
Williams & Son	9,530	0	0
Evans Bros.	9,500	0	0
Charles & Son	9,170	0	0
*H. V. Oakley, Ebbw Vale	8,966	0	0

* Accepted, less £456 for cutting out bath and hot-water system.

GREAT TORRINGTON.

For the removal of old cottage buildings known as 85 and 87 Well Street, and the erection of five dwelling houses, with offices, &c., for the Town Council. Mr. W. C. Medland, borough surveyor, Great Torrington. Quantities not supplied.

Cann	£1,250	0	0
Bowden	1,098	16	0
A. Darel, Torrington (*accepted*)	1,027	19	9

HOLMES CHAPEL.

For the erection of a Council school at Holmes Chapel, Cheshire, for the Administrative Sub-Committee for Education for the Congleton Union area. Messrs. Alfred Price & Sons, architects, Sandbach.

Machin & Son	£3,943	0	0
McLachlan	3,723	0	0
Ball & Robinson	3,575	0	0
Dolan & Son	3,491	0	0
Carlyle	3,460	0	0
Tomkinson & Bettelley	3,380	0	0
Brown & Sons	3,342	0	0
Cooke	3,300	0	0
Huxley	3,250	0	0
Birchall Bros., Middlewich (*accepted*)	3,170	0	0
Architect's estimate	3,100	0	0

NUNEATON.

For the erection of a mortuary and public convenience in Queen's Road, for the Corporation. Mr. F. C. Cook, borough surveyor, Nuneaton.

G. E. & W. Wincott	£606	6	0
G. Smith & Sons, Nuneaton (*accepted*)	583	19	0

RIPON.

For additions to the Isolation Hospital, for the Ripon and Wath Joint Hospital Committee.

Accepted tenders.

Dickenson, Harrogate, mason and bricklayer	£1,468	0	0
Stott & Allcock, Harrogate, joiners	582	0	0
G. Thompson, Harrogate, plumber	260	0	0
R. Fortune, Harrogate, plasterer	88	0	0
Baynes & Beck, Ripon, slaters	62	0	0
Topham & Co., Harrogate, painters	49	0	0

SCOTLAND.

For the erection of buildings at Greenhead filters, for the Irvine and District Water Board. Mr. H. Thomson, architect, Saltcoats.

Accepted tenders.

W. Kew, Kilwinning, builder	£2,743	0	0
R. Glen, Irvine, joiner	475	0	0
M'Millan & Co., Glasgow, steelwork	339	0	0
A. Kennedy, Saltcoats, plumber and slater	261	0	0
J. McMurray, Saltcoats, cement and tiling	203	0	0
McC. Burn & Co., Irvine, painters	59	0	0

SOUTHAMPTON.

For alterations and providing new lavatories at the Royal Hotel. Mr. William Burrough Hill, F.S.I., architect, Southampton.

Jenkins & Sons	£343	0	0
Wright & Son	325	0	0
Brazier & Son	309	0	0
S. Russell & Son (*accepted*)	293	10	0

For alterations and additions to premises, Church Passage, French Street, for Messrs. Binning & Co. Mr. William Burrough Hill, F.S.I., architect, Southampton.

Brazier & Son	£289	0	0
Wright & Son	278	0	0
W. A. Fussell (*accepted*)	270	0	0

For structural alterations at No. 98 Above Bar, for Messrs. Price Bros., bakers. Mr. William Burrough Hill, F.S.I., architect, Southampton.

Stevens & Co.	£59	18	0
Jenkins & Sons	58	0	0
A. Wright & Son (*accepted*)	49	15	0

All of Southampton.

WESTON RYHN.

For the erection of a Council school, for the Salop Education Committee.

H. Dorse, Cradley Heath (*accepted*)	£4,140	0	0

WOOLWICH.

For the erection of an engine house, &c., at the North Woolwich Pumping Station, for the L.C.C.

Moss	£13,979	16	4
Dick, Kerr & Co.	13,476	19	6
Coles	12,674	18	7
Fenn	12,660	0	0
Mills & Sons	11,671	14	0
G. E. Everitt & Sons, Ltd., Croydon (*accepted*)	11,615	0	0

For the provision of five wood and iron ambulance stations, for the L.C.C.

Contractor	Shoreditch £	St. George's Newington £	Lee £	Brixton £ s.
Harrison & Co.	325	295	304	299 0
Boulton & Paul	278	258	258	267 0
Ginger, Lee & Co.	264	260	261	264 0
Humphreys, Ltd.	250	230	234	237 0
Alnwick Foundry Co.	200	190	195	195 0
Cearns	210	180	182	180 0
T. W. Palmer & Co., Merton (*recommended*)	176	160	160	161 10

The Penarth (Glam.) District Council have adopted a scheme, estimated to cost £15,000, for the disposal of the sewage for the western portion of Penarth. The work will not be put in hand until the war is over.

The High Peak Hospital Committee are taking steps to provide more accommodation for enteric cases at their Isolation Hospital at Chinley, and have instructed Mr. C. Flint, architect, Buxton, to prepare plans of a block to hold twelve beds.

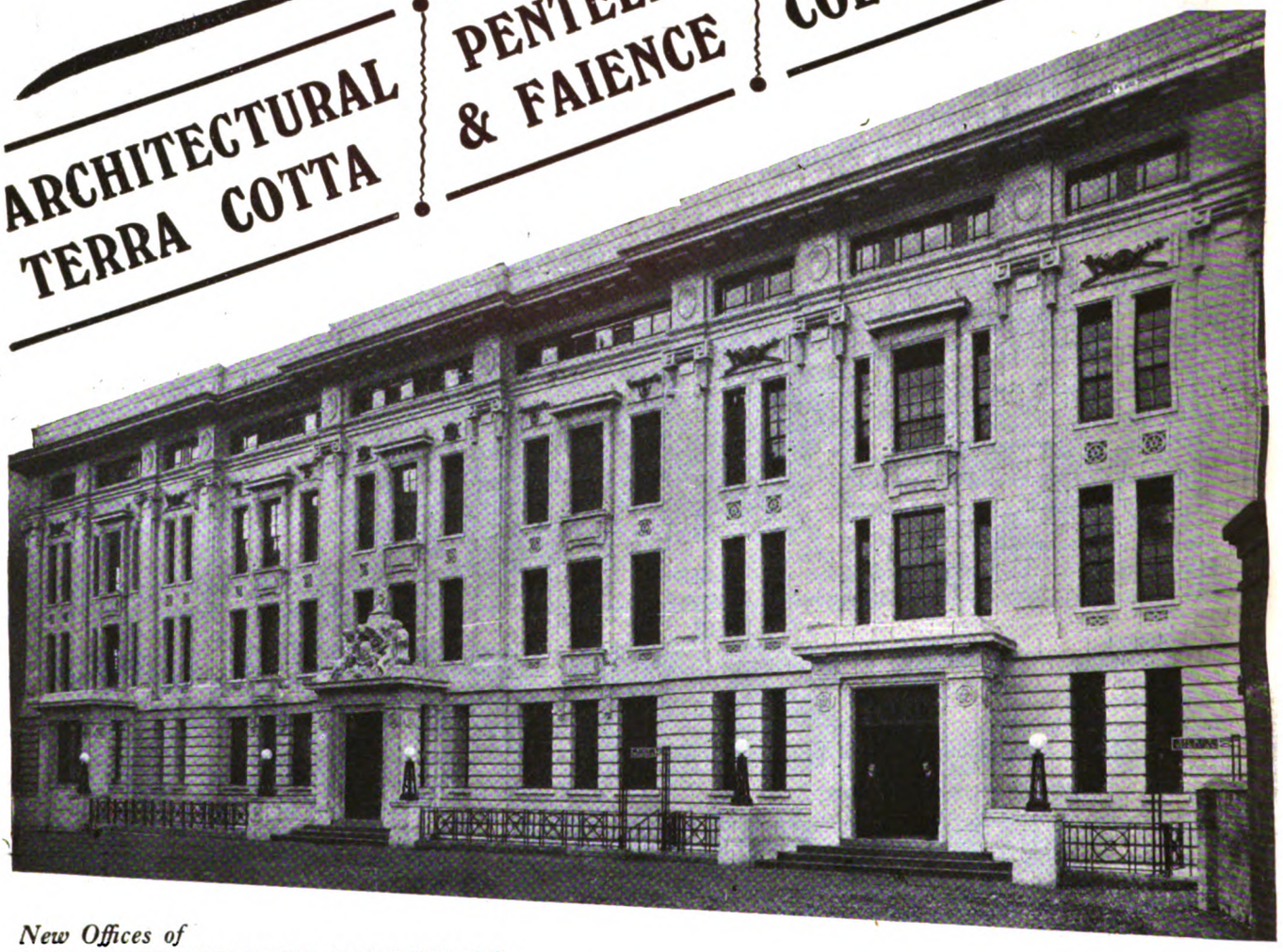
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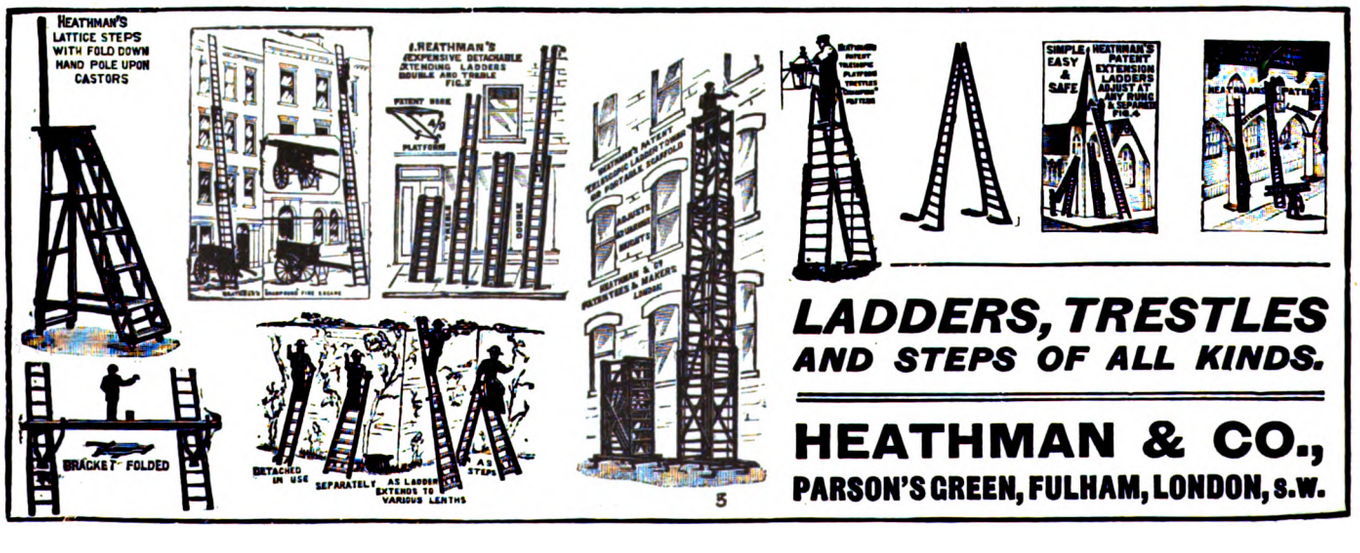
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THE ONTARIO WORKMEN'S COMPENSATION ACT.

THE Ontario Workmen's Compensation Act, which, after an exhaustive investigation of similar legislation in other countries, was adopted by the Ontario Legislature last year, came into operation on January 1. The Act is in itself a scheme of insurance for manufacturers. Under the Act every manufacturer in Ontario is assessed a certain amount per annum. The amount is fixed by the number of men he employs, and by the hazard of his line of industry, as determined by the schedule in the Compensation Act. Out of the common fund so accumulated are paid all claims from workmen who meet with accidents in the course of their industrial duties. There is no appeal to the courts from the findings and awards of the Workmen's Compensation Board. Thus the Act comprises a complete plan of insurance which requires no reinsurance with the employers' liability and accident companies. In practically all cases employers are cancelling their insurance contracts with these companies upon expiration. The purpose of the Act is not to build up a big reserve fund, but to arrive at a basis of assessment which simply provides for compensation requirements. If this is accomplished Ontario employers of labour will, of course, have the benefits of cheaper insurance than that which is now afforded them by the insurance companies.

PATENT SPECIFICATIONS PUBLISHED FEBRUARY 4, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 22,952. Oct. 11, 1913.—Walter Jones, J.P., and Jones & Attwood, Ltd., Titan Works, Amblecote, Stourbridge. Apparatus for the aeration of sewage and other foul liquids.

29,366. Dec. 20, 1913.—Craven Bros., Ltd., Frank Gardner, and A. E. Horrocks, Vauxhall Works, Manchester. Limit switches employed to control the movements of electrically operated cranes, hoists, freight and passenger elevators, winches, turntables, and the like.

417. Jan. 7, 1914.—A. F. Harrison, "Tilecot," Curzon Road, Weybridge, and O. L. Peard, 42 Dingwall Road, Croydon, and Chas. Oliver, 3 Shepherds Green, Chislehurst, Kent. Water heaters or the like for domestic or other purposes.

472. Jan. 7, 1914.—John Barron, 52 Cowcross Street, E.C. Channel bends and the like for inspection chambers.

569. Jan. 8, 1914.—A. H. Phillips and C. G. Arnold, c/o Coup, Phillips & Co., 13 Clerkenwell Road, E.C. Opening and closing devices for fanlights, casements, and the like.

782. Jan. 12, 1914.—F. P. Candy, The Homestead, Mulgrave Road, Sutton. Supply of re-agents in the purification of water.

1,053. Jan. 14, 1914.—Frank Pascall, of the Interoven Stove Company, Ltd., 156 Charing Cross Road, W.C. Auxiliary grates for domestic stoves.

1,106. Jan. 15, 1914.—Robert Brodie, 8 Fettes Row, Edinburgh. Device for preventing down draft in chimneys.

1,124. Jan. 15, 1914.—E. R. Calthrop, Eldon Street House, Eldon Street, London, and F. G. Lynde, "The Eaves," Picardy Hill, Belvedere. Construction of pipes, conduits, sewers, and the like.

1,217. Jan. 16, 1914.—Richard Ames, 145 Ditchling Road, Brighton. Manhole frames and covers therefor.

2,990. Feb. 5, 1914.—Harrison Brotherton, Brierfield, Harboro' Road, Aston-on-Mersey. Flexible curve devices for drawing offices and other purposes.

6,139. March 11, 1914.—E. E. S. Jones, 87 Hartshill Road, Stoke-on-Trent. Cranks or supports for glazed tiles during the process of firing.

7,145. March 21, 1914.—O. C. Hawkes, Globe Works, Bromsgrove Street, Birmingham. Heating elements of electric stoves.

9,191. April 14, 1914.—G. G. Brodie and A. B. Coleman, Eagle Foundry, Catherine Street, Aston, Birmingham. Kitchen or cooking ranges.

10,544. April 29, 1914.—C. A. Woolton, 179 Nag's Head Road, Ponders End, N. Fastener for attachment of window sashes, French windows, doors, and the like.

20,745. Oct. 9, 1914.—G. L. Allen, 113 West Regent Street, Glasgow. Hollow filling blocks for concrete or other floors.

16,553. July 11, 1914.—H. F. Wilson, Carlton Works, Armley, near Leeds. Water heaters.

16,655. Feb. 28, 1914.—J. A. Hughes, 20 Redcross Street, Liverpool. (Communicated by William Hughes and P. C. Rielley, 1 Balfour Buildings, 18 Yuen Nung Yuen Road, Shanghai.) Combined fire extinguishing and fumigating plant.

137. Jan. 2, 1914.—T. W. Ridley, 67 Marton Road, Middlesborough. Apparatus for forming concrete piles.

9,445. April 22, 1913.—W. H. Chadwick and A. E. Macey, 56 Durham Road, Holloway, N. Manufacture of brushes for painting, varnishing, whitewashing, and the like.

17,955. July 29, 1914.—T. W. Twyford, Cliffe Vale Potteries, Hanley, Staffs. Waste fittings for lavatory basins, baths, and the like.

5,618. March 5, 1914.—G. P. Messenger, "Mogador," Layton Road, Hounslow, and D. L. Irwin, 81 Knightrider Street, E.C. Securing flexible roofing in the neighbourhood of skylights or other irregular structures or protuberances upon the roofs of buildings and the like.

15,726. July 1, 1914.—Bilton Evans, Brynderw, Llanyhyther, Carmarthenshire. Foot-operating domestic door opener.

27,581. Dec. 1, 1913.—F. P. Candy, The Homestead, Mulgrave Road, Sutton. Filters.

246. Jan. 5, 1914.—H. M. Macnaughton-Jones, 521 Finchley Road, N.W. Adjustable supports or brackets for lamps, shades, mirrors, or the like.

291. Jan. 5, 1914.—L. S. Rowan, 9 Sandland Street, Bedford Row, W.C., and A. Rowan & Brother, Ltd., 121 Narrow Street, Limehouse, E. Joint for drain-cleansing rods.

473. Jan. 7, 1914.—John Barron, 52 Cow Cross Street, E.C. Traps for general sanitary appliances.

729. Jan. 10, 1914.—Walter Jones, J.P., and Jones & Attwood, Ltd., Titan Works, Amblecote, Stourbridge. Apparatus for purification of sewage or other impure waters.

936. Jan. 13, 1914.—J. E. Foxlee, 11 Colby Road, Upper Norwood, S.E. Fireplaces for dwellings and the like.

1,919. Jan. 24, 1914.—W. B. Young, High Street, Falkirk. Convertible open and closed ranges or grates.

3,944. Feb. 16, 1914.—G. J. Waltho, Union Street, Wolverhampton. Window fastening which secures the sashes in their relative positons both when closed and when partially open for ventilation.

4,794. Feb. 24, 1914.—F. T. Hackman, 5 Western Street, Brighton, and E. J. F. Maflin, 33 Clifton Street, Brighton. Collapsible and portable buildings.

9,653. April 8, 1914.—B. R. Parkinson, 33 Westbury Road, Woodside Park, London, N. Securing the ends of service pipes to gas and water mains.

9,594. April 18, 1914.—A. G. Pemberton, 2 Richelieu Villas, Bagot Road, Bagot, St. Helier, Jersey. Automatic fire or temperature alarms.

13,694. June 5, 1914.—Samuel Ewart, 346 Euston Road, N.W. Gas-coppers.

8,692. April 6, 1914.—A. K. Frantz, Flourtown, Montgomery, Penn., U.S.A. Adjustable level attachments.

8,533. April 4, 1914.—William Oates, Horley Green Works, Horley Green, Halifax. Drain or like pipes.

10,119. April 24, 1914.—E. W. Procter, 1 Britannia Road, Slaithwaite, near Huddersfield. Cooking ranges.

Any of the above specifications may be obtained from J. D. Roots & Co.

THE Roman bath discovered on the site of the L.C.C. fire station in Cannon Street is to be placed in Geffrye's Garden, Shoreditch.

A LOCAL Government Board inquiry into the application by the Corporation of Swansea for powers to construct a main sewer with an outfall in the Bristol Channel at the Mumbles Head at a cost of £350,000, was opened last week and lasted three days.

THE scheme to relieve the congestion of the streets in Sydney, N.S.W., and to provide new facilities for traffic, involves the construction of underground railways, the electrification of the suburban lines, and the building of a large high-level bridge to connect the north and south side of the harbour. The outlay for the whole project, including the erection of a large electric-power station, is estimated at £17,000,000. In order not to obstruct the shipping, which aggregates more than 20,000 vessels annually, the bridge will have to cross in one clear span of 1,600 feet.

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"KEYSTONA."

IT will probably be remembered by many of our readers that one of the decorative novelties shown at the 1913 Building Exhibition at Olympia was "Keystona" leadless paint. The term "novelty" must be qualified, however, for the material had for some years been booming in the States and Canada, was known on the Continent, and had already been introduced to the provinces. In North America, for instance, a wall-surface area equivalent to more than 4,000 acres was covered with "Keystona" during 1910. As to its progress in this country during the past two years, one might almost imagine it saying "Veni, vidi, vici," for the list of recent jobs covers a wide range both in degrees of importance and in locality. No doubt it is due to this encouragement that the decision was arrived at to manufacture it in England, or, to be more precise, at Victoria Mills, Hunslet, Leeds. The Keystone Varnish Company now issue no mere vague guarantee, but a very definite and challenging legal contract.

"Keystona" is a washable oil paint without a gloss, which, it is said, combines the merits of water and of oil paint at little more than half the cost of the latter and nearly equal cost to water paint. In actual practice one coat of preparatory liquid is applied, and then one or two coats of "Keystona" are floated on freely like whitewash, the result being claimed as equal to three coats of flatted lead paint.

For use on wet plaster "Keystona" is not recommended, or rather does not carry the full guarantee that any defect which may show within three years after completion will be made good.

VARIETIES.

THE Batley Town Council have been informed that extensive plant ordered twelve months ago for the modernising of the electricity works had been requisitioned by the Admiralty for installation at one of the naval bases.

ST. PANCRAS Borough Council is recommended by its Highways, Sewers, and Public Works Committee not to accept goods of German, Austrian, or Hungarian make, or tenders from firms or persons of those nationalities.

MR. PERCY FITZGERALD, M.A., recently offered to make and present to the London County Council a bronze statue of David Garrick, with a view to such statue being placed in the Victoria Embankment Gardens, near Adelphi Terrace. After careful consideration it was decided to decline the offer. As far back as 1868 Mr. Fitzgerald wrote a biography of Garrick.

AT the Leeds City Council meeting last week a deputation appeared from St. Matthew's Church, Holbeck, to protest against the building of a picture house opposite the church. Quietness for the daily services was urged to be necessary, and it was held that a cinema house would exert a disturbing influence. The minutes approving the house were, however, passed.

THE death is announced of Mr. John James Moffat, the senior partner in the firm of Messrs. James Moffat & Sons, builders, Camp Hill. Mr. Moffat was the eldest son of the late Mr. James Moffat, the founder of the firm, and a magistrate for the city of Birmingham. For a great many years he had charge of the business, and fulfilled many important contracts in Birmingham and the district.

AFTER considering the application by the Glasgow Archæological Society for a further grant towards the expense of erecting a light structure over the site of the Roman camp at Balmuildy Farm, the General Finance Committee of the Glasgow Corporation recommend that £200 be granted out of the surplus from the Scottish Exhibition of National History, &c. (1911), on the condition that H.M. Board of Works make an equivalent grant for the same object, and that the maintenance of the structure be undertaken by one of the Government Departments.

AT the last meeting of the Wrexham District Council a letter was read from the Local Government Board sanctioning the borrowing of £11,000 for the provision of working-class dwellings at Rhos. It was decided to adopt a scheme, prepared by the engineer, for the drainage of a portion of the new garden city now in progress of construction between Wrexham and Gresford. The estimated cost is £3,900.

THE Liverpool Dock Board have adopted a recommendation of the Works Committee to construct a new main sewer across the dock estate immediately to the northward of the Canada Branch Dock No. 3, with an outlet in the Canada Basin, at an estimated cost of £31,600. The work is in connection with the large new sewer the Corporation are constructing in the North End, and under the Liverpool Sanitary Acts the Dock Board have to undertake the portion on their estate.

THE Birmingham City Council in July last approved plans for the extension of the Victoria Courts at an estimated cost of £29,295. Revised plans have now been prepared by Sir Aston Webb, R.A., showing several additions to and improvements on those previously submitted, and involving an increased cost of approximately £12,000, or a total of £41,760. The Watch Committee last week adopted the new scheme, but decided that, owing to the high prices of materials and labour now obtaining, and the possibility of still further increase, the extension should be deferred for the present.

AT the last ordinary meeting of the Royal Institute of the Architects of Ireland a new committee was formed, called the "Ancient Buildings Committee," consisting of Messrs. L. O'Callaghan, W. A. Scott, G. P. Sheridan, P. J. Lynch, and Dr. Cochrane, with the object of keeping records of ancient buildings of architectural or historical interest. The President also announced that the sum of 100 guineas had been subscribed by the Institute and the Architectural Association of Ireland to the special fund inaugurated by the R.I.B.A. to meet cases of distress among architects arising out of the war.

THE death occurred on Tuesday at his residence, Park Place East, Sunderland, of Mr. William Brown Cooper, a well-known builder and contractor. Mr. Cooper, who was fifty-six years of age, was a native of the town, and was a Past-President of the Sunderland Builders' Association. In 1914 he was elected Vice-President of the Northern Counties Federation of Building Trade Employers. He was sole contractor in Sunderland for his Majesty's Office of Works, and had carried out many contracts in Sunderland, and also in Durham county, where he erected numerous schools for the County Council.

THE London County Council in July last accepted the tender of W. E. Blake & Co. for the erection, within a period of twenty-one months, of a new sessions house at Newington. It was subsequently suggested that bonuses should be given for completion within a shorter period, and prices were obtained from the contractors for the completion of the work within alternative periods, the increase over the contract price varying from £2,000 for completion within twenty months to £13,000 for completion within twelve months. In view of the fact that a shortening of the contract period would necessitate the contractors' men working abnormal overtime and of the financial considerations resulting from the war, it has been decided not to entertain the proposal. The Emergency Committee have decided that, in all cases of tenders received before the outbreak of war, when contractors refused to sign their contracts owing to the crisis, they should be allowed the net variation in cost, exclusive of profit, on the whole of the materials used on the works, subject to conditions. Messrs. Blake & Co signed their contract for the erection of the new sessions house on these terms.

TRADE NOTES.

MR. JOSEPH SUMMERSCALES, of Keighley, a director of Messrs. W. Summerscales & Sons, Ltd., washing and wringing machine makers and general engineers, left estate valued at £14,277.

UNDER the direction of Messrs. Thornley Bros., architects, Library Street, Wigan, Boyle's latest patent "air-pump" ventilator has been applied to Christ Church, Martin's Lane, Liscard, Cheshire.

A HITHERTO unsuspected relation to art is about to be claimed for the railway ticket, seeing that the backs of the tickets issued by the Metropolitan Railway are to be illustrated by a variety of designs expressly drawn by Hassall. A new poster, "It's a pity to puncture the Picture," also by Hassall, where the artist manages to insinuate a subtle compliment to himself, will shortly be on view at all Metropolitan Railway stations. The Hassall drawings are to be employed in connection with approved advertisements which the Metropolitan Company have arranged to have printed on the backs of all their tickets. Although the idea of utilising railway tickets for publicity purposes is not absolutely new, the combination of art and advertising in the manner now proposed, and in conjunction with posters, is quite original. It was initiated by Messrs. S. Davis & Co., of 30-31 St. Swithin's Lane, E.C., who have been appointed sole agents for advertising on the tickets of the Metropolitan Railway.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, February 19.

Royal Sanitary Institute : Sessional Meeting at the Municipal School of Technology, Manchester, at 7 P.M.

Town Planning Institute : Paper entitled "Economics of Town Planning in Relation to Land Development," by Mr. George L. Pepler, F.S.I.

Monday, February 22.

Architectural Association : Paper entitled "Architecture of the Present and the Future," by Mr. A. E. Richardson, F.R.I.B.A., at 8 P.M.

Royal Academy : Lectures on Architecture : (3) "The Arts and Crafts of the Flemish Renaissance," by Professor E. S. Prior, M.A., A.R.A., at 4 P.M.

Surveyors' Institution : Papers on "The Report of the Land Enquiry Committee on Rating," by Mr. Isaac Dixon and Mr. E. H. N. Hyde, at 8 P.M.

Wednesday, February 24.

Royal Academy : Lectures on Architecture : (4) "The Two Eras of Flemish Sculpture and Painting," by Professor E. S. Prior, M.A., A.R.A., at 4 P.M.

Carpenters' Hall : Paper entitled "A Comparative View of French and English Cathedrals," by Mr. Francis Bond, M.A., at 7.45 P.M.

THE RESUSCITATION OF BELGIUM.

THE conference convened by the International Garden Cities and Town Planning Association for consultation as to how the best use may be made of the opportunity presented by Belgium's devastation for a new departure in the resuscitation of the country attracted considerable interest. Naturally, from the source of its inception the thoughts of the conference were directed toward that modern ideal of town planning which we call the garden city. Charming as were many of the old cities and towns of Belgium, they were as far removed as possible from anything like a garden city, and hence the proposal for such a resuscitation involves the most subversive change conceivable.

Necessarily the replanning of Belgian towns on garden-city principles involves immense difficulties, the more so that great landlords are rare exceptions. The towns are divided up amongst numerous freeholders, each as a rule with a very small holding. The land in the towns is densely covered with buildings. How are the innumerable interests of owners to be reconciled? Which of them is to be allowed to rebuild his house and which must consent to see his plot of ground turned into a garden?

Mr. Raymond Unwin did not go too far when he advocated that plans for the rebuilding of Belgian cities should take in nearly the whole of the country, and that in consequence the authorities who ought to take the matter in hand were both the State and the municipal and provincial authorities. The only way, it seems to us, in which it is possible for Belgium to be replanned on garden-city lines is for the State to take possession of the whole country, commandeer it, sequestrate it—call it what you will—and parcel it out amongst its future owners. Here is a fine opportunity for constructive statesmanship. But how formidable the difficulties of compensating the former owners! For it would be unthinkable that they should not be compensated, and not only unthinkable, but impossible, for any such line of action would upset the strongest Government in the world and swamp the land again with blood, poured out in the welter of the most appalling revolution the world has ever seen.

The pious resolutions of the conference are all very well in recommending that plans in harmony with the principles of the Garden Cities and Town Planning Association should be prepared of those towns and villages that have been wholly or partially destroyed in Belgium, and that the distribution of State grants should be made subject to the adoption and execution of those plans. It is easy to make plans on paper. It is quite another matter to finance their execution.

The English methods of garden-city building were very well explained by Mr. Herbert Samuel, President of the Local Government Board, when he welcomed the members of the conference in the name of His Majesty's Government. The Belgian people, with splendid courage, he said, sought to turn to benefit even the disaster which had overwhelmed their country. Belgium had been the victim of an orgy of destruction unparalleled in the history of hundreds of years. Beautiful mediæval buildings which had passed unscathed through the ravages of centuries had now fallen. These, indeed, could not be replaced. Their vacant sites remained as a monument of the shame of Germany. But from the ashes of many of her towns, they might hope to see rise a new and finer Belgium, and her people were already turning from their sorrow and from their righteous anger to look to the future and to the period of reconstruction. Among the refugees, nearly 200,000 in number, whom we were proud to have among us, and who endured with admirable patience the British climate and British customs, there were about 200 architects and surveyors. The happy idea had occurred to some of their sympathisers in this country to bring together these professional men and to place at their disposal our experience in the development of towns on modern lines. The proposal was welcomed by the Belgian authorities, and this conference was the result. He was glad that it had the support of M. Helleputte, the Belgian Minister of Agriculture and Public Works. They were also fortunate in having the presence of representatives of other countries. Those who had suggested the conference were far from supposing that methods which were good for England were necessarily good for Belgium. The towns of different countries had their distinguishing characteristics, and one would be sorry to see them merged in any kind of uniformity, however attractive the model. Yet certain principles if well considered and well founded, might be of universal application. In the middle of the last century there arose a spirit of revolt against the results of the almost unchecked rule of the principle of *laisser faire* which had been dominant in the previous period. The nation had then, as it still had, an intense passion for personal liberty, but at the same time it was found that the complete absence of control might bring disaster. At first it was not the State, but private enterprise that realised the evils that resulted from such a state of things, and sought to remedy them. Certain employers of labour built model towns for their own workpeople; public-spirited men bought up tracts of land and built on them a garden city and a number of garden suburbs adjoining some of our great towns.

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In the land and houses of the garden cities and garden suburbs no less than three and a half millions sterling was now invested. The existence of these new towns and suburbs was an important object lesson, and at last, in 1909, Parliament passed the Housing and Town Planning Act, the underlying principle of which was to establish public control over the development of cities, but a public control combined with consideration for the interests of landowners and builders. Under its operation a progressive landowner, anxious to develop his estate on the best lines, no longer found that his scheme was spoilt by the careless methods of a less intelligent neighbour. The whole district felt the benefit of the improvement. Already 112 schemes had been adopted or were being prepared by local authorities, covering no less than 180,000 acres, probably not less than one-half of the whole area already built upon in England and Wales. The Act provided that compulsion might be used against landowners who refused to comply with a scheme of a local authority, but so far in not a single case had it been necessary to put those powers in operation.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

THE number of drawings we have received for last month has been small, but the quality of them is high.

"Improver" sends measured drawings and perspective sketch of a pulpit in the chapel of Chipchase Castle, Northumberland, an eighteenth-century example with sounding board. Our contributor's rendering is well drawn and adequately detailed.

Mr. B. Fraser's contribution is an oak settle from the museum in Bishop Lloyd's Palace, Watergate Street, Chester. The settle is an interesting example, and Mr. Fraser's drawing is good, though short of details.

We award prizes of one guinea each to "Improver" and Mr. B. Fraser.

NOTES AND COMMENTS.

THE custodians of ancient buildings are often between the devil and the deep sea. For there are various ways of regarding them. This is well illustrated by the various opinions that have been expressed concerning the roof of Westminster Hall. Its present condition is that its stability is so far impaired by decay and ravages of wood-destroying larvæ that it is on the verge of collapse. One set of advocates desire that all the old work still remaining should be preserved, so that we may, as long as possible, look upon the actual handiwork of our forefathers. H.M. Office of Works desire to comply with this very natural sentiment, and from the plans of Mr. F. Baines, M.V.O., propose to relieve the woodwork of the roof from the stress of its work and carry the roof-weight on steel construction. Now come the carping critics, objecting that "the roof will be a steel roof pretending to be of wood—in plain terms, it will be a fraud." This group of critics would apparently desire to substitute an honest steel roof and sweep away all the decayed and damaged timber, or substitute a reproduction in modern oak and modern work of the old. But surely this would also be a fraud! For it would profess to be a mediæval roof and would require close and expert examination to determine the validity of the profession. There are some who urge the argument that the present timbers might be repaired where defective. They have evidently not read the published statement of facts that records the actual condition of the timbers, and in their airily lofty assumption of possibility ignore the feasibility of replacing the interior of a piece of timber of which only an outer shell remains.

In the Upper House of the Convocation of York, the Bishop of Manchester called attention to the report of the Chancellors of the Archbishops, and particularly to the recommendation of the Chancellors that in each diocese and honorary advisory body should be formed to assist in determining the architectural features of any ancient church or building were being properly preserved, the Court not to be bound by the opinion of this body (This House had suggested that a special architect should be appointed.) The Chancellors suggested that this body should not only assist the Chancellor in the question of the varying of the structure of the church, or the restoration of the structure of the church, but consider applications for the sale of chattels. The time would come, said Dr. Knox, when they would have to consider the best treatment of these valuable possessions of some churches. "We should all deprecate the sale of such chattels," added the Bishop. His Lordship suggested that a small committee should be appointed to consider the recommendations of the Committee of Chancellors.

This was seconded by the Bishop of Liverpool.

His Grace the President remarked that one of the most hopeful signs at the beginning of the twentieth century was that possibly more than at any other time the nation had given pious thought to the memorials of antiquity throughout the country. But both in Parliament and in the deliberations of learned societies there had been a very inexact knowledge of the system which the Church had already provided for the care of ancient churches—he referred to the system of Consistory Courts, and of the faculties that must be obtained in these Courts.

The motion was agreed to, and the Archbishop and the Bishops of Manchester and Wakefield were appointed as the Committee, and the President suggested that they should have power to confer with any similar committee of the Convocation of Canterbury.

At a meeting of the Society of Antiquaries an interesting account was given by Mr. F. Lambert, assistant curator to the Guildhall Museum, of recent Roman discoveries in London and the excavations on the site of the G.P.O.

Mr. Lambert began by making some references to the remains of a Roman house found in 1880 on the site of Leadenhall Market. In 1848 walls six, seven, and eleven feet thick, extending east and west, were unearthed near Half Moon Passage, now covered by the avenue of the market along to Gracechurch Street. Again in 1905 the same walls were struck. In 1880 and 1881 the site had been completely uncovered. The principal wall was 12 ft. 7 in. thick, running almost due east and west about 150 ft. long, and apparently running underneath the line of Gracechurch Street.

In 1912 Roman foundations were found on the site of the Mercantile Bank of India, on the western side of Gracechurch Street, 7 ft. wide, descending to a depth of 30 ft. below the pavement. At the northern end of the same street remains pointing to the existence of large Roman public buildings have been discovered.

The first important excavation on the site of the General Post Office was made between 1818 and 1825, when Smirke's building was erected.

In the winter of 1913 Smirke's building was demolished and the soil excavated to a depth of from 22 ft. to 24 ft. The objects found during the contractor's excavation were carefully collected. Three conclusions were come to: (1) The majority of the objects found dated from the first century A.D.; (2) only a very small proportion were later than 150 A.D.; (3) the objects found at the south end were of earlier date than those found at the north.

One of the most interesting relics of Roman London found here was a gold ring, bearing the initials Q.D.D., and an intaglio seal, engraved with an eagle and hare. Another relic was a Jewish coin, struck in Palestine at the time of the second revolt of the Jews (132-135 A.D.).

Further discoveries were the front of a mould for making medallions for pottery and the head of a statue of Venus, and a fragment of a shrine, made of pipeclay from the south of France, of the first century A.D.

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HOUSE IN ELM DRIVE, GIDEA PARK.
Mr. T. MILLWOOD WILSON, Licentiate R.I.B.A., Architect.

The money for the investigations was supplied by the Corporation and the Goldsmiths' Company. The Office of Works co-operated, and further work will be done under Mr. Lambert's supervision.

Bones of sheep and pigs were also found, and the skull of a pug. A sheep skull indicated the existence of a breed with four horns.

Interesting remains were also found in Sherborne Lane when the building of the Phœnix Insurance Company was being put up.

In distributing the prizes to students of the Birmingham Municipal School of Art, Mr. Charles Holme, editor of the *Studio*, spoke of the effect of the war on art in response to a request made to him. He put forward the following questions: Would the financial losses be so overwhelming as to destroy for many years to come all prospects of making a living out of the profession of art? Would the interest of the public in art be lessened? Would any drastic changes in the fashion of art be demanded? These were some of the questions which exercised the minds of artists at the present time, and it was most difficult to give a definite answer to any of them. They would have to bear themselves in patience for many months before prospects were clearly defined. But in these days of marking-time they might assure themselves that the great subject of art would outlast all present storms and troubles. Art in some of its phases was essential to civilisation; it was the outcome of the subtler senses of man; and its expression not only required the trained eye and hand, but also the front functions of the brain as well. It was a form of language of such a nature that no dictionary ever compiled contained all the words to express what it could impart. Without a knowledge of and a strong feeling for art they must fail to appreciate many of the manifestations of nature. Referring to art teaching in relation to the crafts, Mr. Holme said there was a tendency among some people to criticise unfavourably the productions in wood-carving, metal work, pottery, and other forms of decorative art as exhibited in the schools. The error made by such critics was in suggesting that the work so produced should be of a very much higher quality. They did not find the critics commenting unfavourably on the oil and water-colour paintings and other forms of the graphic arts because these did not reach the level of the old masters. Why then should they imagine that examples of art craftsmanship done in the schools should be of surpassing excellence? In conclusion, Mr. Holme, dealing with the memory system of drawing, which, he said, Mr. Catterson Smith had so wisely adopted in the Birmingham School of Art, said he believed that system would have good results in the future, and they would do well to give support to their director.

At the last monthly meeting of the Society of Antiquaries of Scotland, Mr. J. Graham Callander, secretary, described a small cup of cast bronze found in

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a sandpit some years ago near Tarland, Aberdeenshire. This object, which appears to be unique, measures 2½ inches in external diameter at the mouth, and has a height of 1⅝ inch. It is gracefully designed, and ornamented round the neck with a transverse row of small studs less than ⅛ inch apart, finished with sharp conical heads having a projection of about ⅛ of an inch, and with groups of vertical rows of similar studs extending upwards to the lip. As the cup was cast, these studs were purely ornamental, but in style this small vessel presents a resemblance to certain large cauldrons formed of plates of bronze, in which similar studs are used both structurally and for ornament, preserved in the National Collection. With the cup were found a number of small glass discs, such as are not uncommon on Roman sites, and are believed to have been used as counters or playing-men. A single human tooth found also seems to point to the deposit having been sepulchral. The evidence appears to place the find in the first or second century of our era.

One good result of the Civic Exhibition held in Dublin last year was the formation of the Civic Brightening-Up Guild (in affiliation with the Civics Institute). The main object of the Guild is to assist in beautifying the city by transforming derelict spaces into children's playgrounds and school gardens, and in the various rooms of the building were displayed numerous pictures, illustrative of the campaign for the fighting and prevention of disease and the perils that assail child life amongst the working classes. In addition to the establishment of babies' and mothers' clubs, girls' clubs, boys' camps and clubs, social centres, men's clubs, and recreation rooms, it is the purpose of the Guild to provide during the war accommodation for social clubs for soldiers' and sailors' wives and mothers and other relatives.

The Guild was established at the time of the Civic Exhibition. The Guild set to work and commenced by dealing with the streets adjoining the Civic Exhibition. The owners of property were asked to paint and decorate their houses, and the occupiers were asked if they would accept gifts of window-boxes filled with flowers. The Corporation and the Tramway Company were asked to assist in brightening the streets, and the response made to these appeals was magnificent. Her Excellency Lady Aberdeen presented the Guild with 400 window-boxes, filled with growing plants, and not only the members of the Guild, but the public, should feel deeply indebted to their Excellencies for the interest they continued to show in the welfare of the people.

The assessment of sewers for income-tax has excited considerable opposition in some of the Scottish burghs on the ground that this being paid through the local rates, of which of course it forms only a small fraction, falls upon persons who under the general rules of income-tax assessment should be exempt. There is also the inequality that hardly any boroughs in England have been asked to pay income-tax, and that even in Scotland burghs were not on the same footing.

War-time has developed various ingenious schemes on the part of our financial authorities, but it has been reserved for a Lincoln magistrate, who holds strong views on Socialism, to propose that the Corporation of Lincoln city should seek power from Parliament to issue paper notes in order to pay for a new school. This is, however, but a revival of the old custom of tokens, which were issued by towns and even by tradesmen in the past. There is but a question of degree between a copper token and a paper note. Both are equally an acknowledgment of liability to pay in sterling coin, and depend for their acceptability upon the credit of the issuing party.

WAR ITEMS.

In connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of enquiries for the names of sellers or buyers of articles of which sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these enquiries, and lists are prepared and circulated of articles which enquirers desire (a) to purchase and (b) to sell. List 8a is now ready and may be obtained by United Kingdom manufacturers and traders.

British firms interested in any of the goods mentioned, either as buyers or sellers, should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

THE LATE F. R. E. SLADDIN.

MR. F. R. E. SLADDIN, a well-known and respected Cape Town architect, died at the Mowbray and Rondebosch Cottage Hospital on Sunday, January 10, after having undergone an operation for appendicitis, at the early age of thirty-four. The late Mr. Robert Sladdin was a Fellow of the Surveyors' Institute of London, a Licentiate of the Royal Institute of British Architects, and a Fellow of the Cape Institute of Architects, and a member of the Council of the latter body. Articled in 1898 to Messrs. Young & Brown, surveyors, of London, Mr. Sladdin went out to Cape Town in 1905, where he joined his brother, Mr. T. A. Sladdin, F.R.I.B.A., and practised with him until 1910 as Milne & Sladdin. Since 1910 the deceased gentleman had been sole partner.

A man of many attractive social qualities and gifts, the late Mr. Sladdin was very popular and will be much missed. He was an active member of many clubs and societies and an indefatigable worker and organiser of entertainments for charitable and other beneficent objects. He was also a good sportsman and a ready public speaker. He has left a widow and child at present in England. "His sun has gone down while it was yet day."

The funeral took place at Maitland on the day following death. The Rev. C. Brook, Rector of Rondebosch, officiated, and there was a large gathering of mourners. Among the many beautiful wreaths were tributes from the Cape Institute of Architects, the Melodic Club, the Owl Club, the Olympic Sports Club, and Mr. Justice Maasdorf.

SHEFFIELD SOCIETY OF ARCHITECTS.

BEFORE the Sheffield Society of Architects and Surveyors Mr. W. S. Purchon, A.R.I.B.A., lectured last week on "Architecture and Environment." Mr. Purchon, in his effort to stimulate interest in a new "atmosphere" in architecture as indicated in the subject of his lecture, referred to the great architectural glories of Rome, Greece, and Egypt, thence passing on to the Romanesque and Gothic eras in Western Europe, and to the spread of the Renaissance in England and France. He explained that he wished the character of the work of past ages to be extended to-day and that his remarks had been influenced by a desire for education. No architect was ever called upon to prepare a building which possessed no environment, and he sought to blend the environment with the building, so that a harmonious whole might result.

COMPETITION NEWS.

NEWCASTLE-ON-TYNE.—At the last meeting of the Education Committee the Rutherford College Committee recommended that the design of "No Steps" be approved for an assembly hall at Rutherford College Girls' School, if the plans could be slightly amended. The contract is for £4,000, and the design of "No Steps" was from Messrs. Marshall & Tweedy.

MR. JOHN ALFRED ARNESBY BROWN, A.R.A., and Mr. Joseph Farquharson, A.R.A., were last week elected Royal Academicians.

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ILLUSTRATIONS.

BUSINESS PREMISES, LONDON ROAD, NORBURY.

THIS building is designed to meet the needs of a trading company requiring ample show-room space, with workshops in the rear on the ground floor, a lecture-room for occasional demonstrations on the first floor, and on the top floor residential accommodation for the local manager.

The materials to be silver-grey stocks, with stone dressings and hand-made roofing tiles. Window displays being a secondary consideration in this case, it was decided that large areas of plateglass would be unnecessary. It was, therefore, possible to add scale to the design by the use of glazing bars without diminishing the commercial value of the premises.

The architects are Messrs. Topley & Baxter, AA.R.I.B.A.

"MILL HILL," 14 AND 15 WINTERSTOKE GARDENS.

THESE houses are the last pair of a group of sixteen, built during 1910-12, with a frontage to Hammers Lane and abutting on the grounds of Mill Hill School. In front of the houses, which are symmetrically grouped on either side of the entrance to the school property, is a common garden, of an average width of 50 feet, in which the five existing trees have been left standing. The builders were Messrs. Wm. Moss & Sons, Ltd., of London and Loughborough, and Mr. M. S. Briggs, A.R.I.B.A., was the architect.

"CLAREMONT," GIDEA PARK.

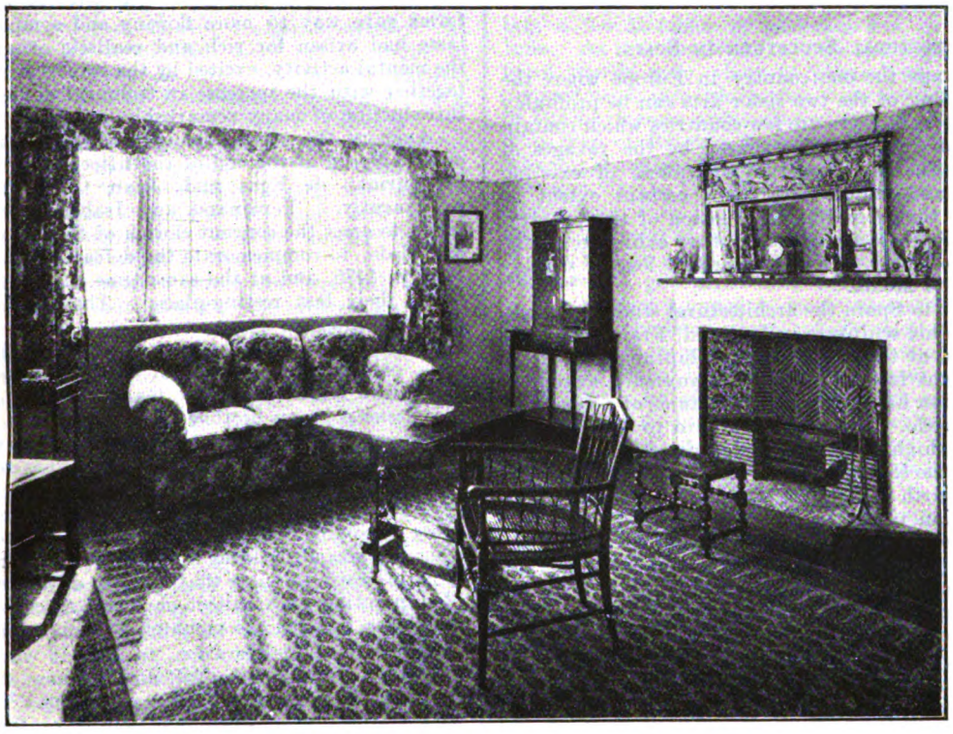
THIS house is planned to suit the aspect, the dining-room facing south-east, the drawing-room south-west, the hall south, and the kitchen and larder north. The walls are of keyed Fletton bricks, plastered inside and out, with hand-made stock bricks for plinths and chimney caps. The builders were Messrs. W. Moss & Sons, and the architect Mr. A. Randall Wells.

"DIE LORELEI," GIDEA PARK.

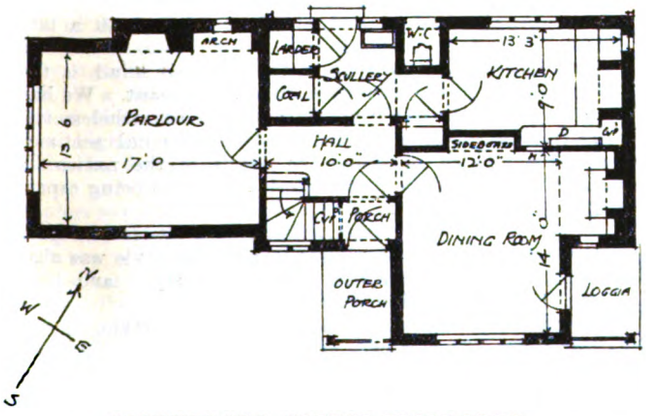
THIS house has an open wooden entrance porch with seat. The dining-room has a large curved bay window, and the drawing-room a bay with seat, looking on, and leading into, the garden. Up to the first-floor level the walls are built hollow and faced with cherry-red bricks. Above the first-floor level the walls are covered with rough cast, distempered cream. The tiles are red-brown Broseley tiles; the windows are all leaded lights in wood casements. The builders were Messrs. W. Moss & Sons, and the architects Messrs. K. D. Young, F.R.I.B.A., and H. Hall, F.R.I.B.A.

"SOUTHEASE," GIDEA PARK.

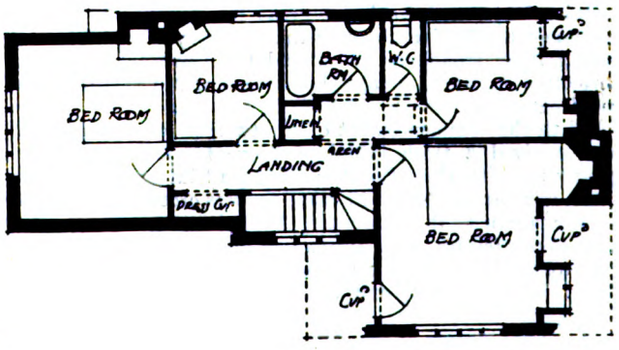
THIS house has been planned so as to obtain all the sunlight possible, as may be seen from the plans. Externally the house is built with hollow walls of hard stock bricks, distempered cream colour, with hand-made silver-grey tiles for the roof, and the windows have leaded lights and iron casements. The chimney stacks are of local red hand-made bricks 2 inches thick. The builders were Messrs. W. Moss & Sons, and the architect Mr. T. Millwood Wilson, Licentiate R.I.B.A.



PARLOUR, "SOUTHEASE," GIDEA PARK.



"SOUTHEASE."—GROUND FLOOR PLAN.



"SOUTHEASE."—FIRST FLOOR PLAN.

WESTMINSTER ABBEY, NORTH TRANSEPT.

THIS drawing was made by Mr. Chas. S. Carter, as part of his work as "The Architect" Travelling Student for 1914.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A GENERAL meeting of the Royal Institute was held at Conduit Street on Monday, February 15. Mr. Ernest Newton, A.R.A., President, occupied the chair.

The decease was announced of the following members:—Henry Dawson, elected Associate 1859, Fellow 1869; George Herbert Burstow, Associate, elected 1910; John James Smith, Associate, elected 1882; Frederick Robert Edwin Sladdin, Licentiate, 1912.

PRESENTATION OF PRIZES.

Mr. Ernest Newton said the meeting would remember that owing to the war the annual competitions for the prizes and studentships in the gift of the Institute had been postponed. He had, however, the pleasure to make two presentations that evening—one, the Ashpitel prize, to Mr. G. E. Francis, who has distinguished himself most highly in the final examinations of the year, and the other, the Pugin medal, to Mr. William Cecil Young, who was awarded the studentship last year and, having fulfilled the conditions to the satisfaction of the Council, is now entitled to receive the medal.

The Ashpitel prize and the Pugin medal having been presented, Mr. And. N. Prentice, F.R.I.B.A., then read a paper entitled

ARCHITECTURAL SCULPTURE IN SPAIN.

Spain is perhaps the one country in Europe where the happy intermingling of the two sister arts can be profitably studied. At all events, there are few countries which contain such a wealth of fine examples spared by the ravages of time and war. The well-preserved sharpness of existing works in stone and marble may to a certain extent be accounted for by the geographical situation of the country, while the profusion of decorative sculpture exhibited on the buildings may be traced to a characteristic love of display inherited from the Moors.

On a first visit to Spain the architectural student already familiar with Gothic sculpture in England, France, or Italy will be astonished at the richness and voluptuousness of the work when brought face to face with many such examples. No Spanish sculptor has ever risen to the fame of a Donatello or a Michael Angelo. Nevertheless, Spain produced native talent of a very high order, quite unsurpassed by any in England during the same period.

To trace the birth of Spanish sculpture we must go back to Early Christian times, to a period long after the Visi-Goths had gained a footing in the peninsula. It would appear that the Visi-Goths mainly expended their energies in fortifying their towns and in converting the Roman buildings to Christian uses. On the conquest of Spain by the Moors in the year A.D. 711 the vanquished Goths retired into the mountain ranges of the Asturias, where they were able to establish themselves and to form a stronghold, from which their champion Pelayo in later years issued forth, and started the movement for the reconquest of Spain to Christendom.

Scattered along the coast to the north-west of Spain are remains of churches of the eleventh century, containing portals, fonts, and tombs of great interest if not of very great merit. Native Spanish art was very slow to develop during these troublous times, and the Christian monarchs were often driven to engage the services of Moorish sculptors and decorators.

With the commencement of the twelfth century architecture received a fresh impulse. More frequent intercourse sprang up with the adjoining northern States. Royal marriages were arranged, and French princes crossed the frontier to war against the Moors. Accompanying them came numerous prelates, and afterwards followed architects and sculptors. The influence of the great ecclesiastical order of Cluny was soon felt, and the Romanesque style gradually developed.

The imagination of the Romanesque stone-cutters lavishly displayed on monuments and in churches may be admired on the double capitals in the cloisters of Santo Domingo de Silos. They are all richly carved with Bible subjects, with beast forms, fantastic monsters, and familiar scenes from human life.

With few exceptions the new churches were of moderate size. Their type was that of the basilica, with well-marked transepts, and occasionally at the crossing a lantern dome was added. At Toro, Zamona, and Salamanca this form of dome was further developed. It seems to have been a feature on which the Spaniards exercised their ingenuity in evolving a type peculiarly their own. The Romanesque style lasted longer in Spain than anywhere else, and continued till as late as the fourteenth century.

In France the tremendous activity of the thirteenth century architects soon made an impression on Spanish architecture. As a result the cathedrals of Leon, Toledo, and Burgos came into existence modelled on buildings such as Amiens and Rheims. The creative activity of the sculptors, stimulated by studies from life, produced work which deserves to rank with the best French examples, as, for instance, the figures on the portals of Leon, Burgos, and Tarragona cathedrals.

The sculptures at Burgos Cathedral are alone sufficient to indicate the proficiency of the stone-carver's art; those in the cloisters bear traces of colour. Fortunately, up to the present, they have not suffered from restoration. The colours are faded, but the vivid reds and blues, so much used by the Moorish decorators, can be easily seen, together with traces of gilding.

Up to this time Spain was content to retain the services of French sculptors as her teachers and advisers. In the last third of the fifteenth century, however, Flemish carvers were induced to visit Spain, and brought about a transformation of the art.

In architecture the geometric severity of early Gothic forms gave way to more flowing and sympathetic lines, a taste had arisen for rich and realistic ornamentation, and the mental activity, excited by the importation of new styles, together with the increase in technical dexterity, led to the introduction of many remarkable buildings.

Amongst the many Flemish architects who were brought over to Spain at the end of the fifteenth century, the names of Enrique de Egas and Juan Guas stand out most prominently. Ferdinand and Isabella commissioned the latter to erect the convent church of San Juan de los Reyes, at Toledo, to commemorate the defeat of the Portuguese at Zoro in 1476, and at the same time they meant this church to be their last resting-place. The building has a very beautiful interior.

Cardinal Mendoza, who was primate of Spain at this time, obtained the services of the architect Juan Guas to design the family palace at Guadalajara. Juan Guas was also assisted by his brother Enrique, and the latter no doubt is responsible for the fantastic design of the patio. It must be admitted that this kind of treatment is very appropriate to a southern climate.

With the advent of the sixteenth century native architects arose in Spain, notably the Hontañons, father and son, and when the idea of building a new cathedral at Salamanca arose it is interesting to note that in those days the vexed question of appointing an architect gave rise to considerable discussion, even between the monarch and his subjects.

After much deliberation, in 1512 it was decided not to pull down the old cathedral, and the new structure rapidly arose on a site immediately adjoining. The west front, with its profuse adornment of sculpture, was the first portion of the fabric to be erected, developing later lofty arches, slightly reminiscent of Peterborough. The centre arch is enriched from top to bottom with fine medallions, delicate ornamentation, and statues, executed at a later date.

The impression conveyed to the English mind is that the whole thing is overwrought and extravagant. We have nothing like it in our own country, but nevertheless it is a faithful expression in stone of the national sentiment for display which pervaded the minds of the nation. It would, indeed, be difficult to conceive the style being capable of further development.

Some twenty years later, after the erection of Segovia Cathedral by the same architect, the Gothic style was abandoned in favour of the new Plateresque style, and forms of the Early Italian Renaissance.

During this transition the "Mudejar" style, as it is called, came into existence.

On the discovery of the New World architecture developed a strong Renaissance feeling. A new style gradually came into being. It was called the Plateresque. The name seems to have been conveyed from the notion that its surface ornamentation and arabesques resemble the carefully chiselled work of the silversmiths. Spanish sculptors who had studied in the studios at Rome took part in the movement, and vied with the late Gothic sculptors in decorating buildings with a new garb. The old Gothic constructive principles still remained, the new birth being simply a change into Classic detail of Gothic ornament.

The sculptor Philip Vigarni or Borgoña was one of the

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first to come under the influence of the Plateresque. We find him in the capacity of architect undertaking the rebuilding of the lantern dome of Burgos Cathedral, a marvel of rich Renaissance detail cleverly mixed with the Gothic.

To the student of the Plateresque the buildings of Salamanca would perhaps most strongly appeal. It was in that city that Diego de Deza, Archbishop of Seville, added the fine Plateresque façade to the church of San Esteban, commonly called Santo Domingo.

The finest and most perfectly preserved carvings in Spain are undoubtedly to be found in the interiors of the great cathedrals. The subject of sepulchral monuments in Spain could alone fill a large volume. Their number is infinite, and to anyone conversant with Spanish history the greatest pleasure and interest are afforded by their examination. They present to the mind, with the greatest vitality and distinctness, men who have taken an active part in the national affairs of Spain.

There are some really fine monuments in the cathedrals of Salamanca and Burgos. Many of them are richly painted. The predominating tints are red, dark blue, and white; there are also traces of yellow, possibly due to the sizing used in fixing the gilding.

In the kingdom of Aragon, which borders on the Mediterranean, intercourse with Italy was frequent, and we find works of Spanish sculptors showing Italian sympathy. At Sequenza there is an admirable tomb of a knight of Santiago, Martin Vasquez de Arco, one of the earliest monuments to show Italian Renaissance influence. It is attributed to Damian Forment, a native of Valencia.

At this period Spain had the proud honour of producing a sculptor of its own, in the person of Gil de Siloe. He was a native of Burgos, a city already famous for its many fine productions of the sculptor's art, and, born in an atmosphere of deep inspiration, it is no wonder that he soon became the greatest artist of his day.

With the early Renaissance movement, especially in the south, a whole series of monuments of the greatest historical interest came into being, in which all the forms and motives of this style are represented: medallion reliefs, statuettes, garlands of fruit, winged lions, and other animals. The Florentine sculptor, Domenico Fancelli, came over to execute the monument erected to the Catholic Kings of Granada. The Spanish sculptor, Bartolome Ordoñez, without doubt collaborated with Fancelli, for it is known that he went over to Carrara from his native town of Barcelona to execute the memorial to Cardinal Ximenes. Fancelli having died in 1520, Ordoñez was chosen to complete the work. There seems, also, to be no doubt that Ordoñez was the author of the tombs of Juana la Loca and her husband, Philip I., placed somewhat later at the side of the monument of her father and mother in the Royal Chapel of Granada.

Much praise has been lavished on these famous monuments. Their creation caused great excitement amongst artists of all nations, and when the scheme was first promoted foreign sculptors hurried to Granada. It is stated by some writers that a competition was instituted and that the famous Italian sculptor, Torregiano, who designed the tomb of Henry VII. in Westminster Abbey, was one of the unsuccessful competitors. Torregiano afterwards carried out many statues in Seville, where he ultimately settled and died of a broken heart. Nevertheless, it must not be claimed that the figure sculptors of the Renaissance were on a higher plane than their immediate predecessors; neither in expression nor character, nor in observation of nature, nor in gift of story-telling were the Renaissance sculptors superior to their brethren of the late Gothic period which we have just been discussing.

It was not long before Spain found a great exponent of the new art. The influence of Michael Angelo soon had an effect on the Spanish temperament. His work appealed to their feeling for the serious, the dignified and the deeply emotional. The name of Alonso Berruguete is identified more than any other with this whole period, especially with the grotesque style. He was born in the year 1480, and was the son of the King's painter. On arriving in Italy he entered the studio of Michael Angelo, where he was entrusted with the copying of the Pisan Cartoon. On his return to Spain in 1520 Charles V. appointed him to be royal sculptor and painter. His carvings in wood and stone are to be found throughout the country. Some of his principal works in wood are the carvings on the Gospel-side of the choir stalls in Toledo Cathedral.

The most remarkable features of a Spanish cathedral were the altar-pieces or Retablos Mayors, as they were called. From a very early date the choir of a Spanish cathedral became located in the centre of the building immediately to the west of the transept crossing, and it usually occupied about three bays of the nave. Facing it, on the east side of the crossing, was the Capilla Real, placed in that part of the building which formed the choir in an English cathedral. The spaces occupied by the choir and the Capilla Real were enclosed on three sides by lofty stone screens.

It seems, therefore, fitting that the large expanse of blank wall, on the outside of the choir, called the Trascoro, should be utilised for the display of sculpture. The peculiar position of the choir was owing to the admission of the laity to the transept in front of the altar.

The back of the Capilla Real in the cathedrals, called the Trassagrario, was often richly decorated. In Burgos Cathedral it was completely covered with sculpture.

The altar-pieces of Spain are the distinguished expression of the country's art, and their construction gave endless employment to the architect, the sculptor, and the painter. In no other country have their works developed and assumed such huge proportions. At first we find them as screens, dating back to the twelfth century, when small portable altars or diptyches were used by generals to pray in front of before going into battle. The Romanesque churches contain a few Retablos of moderate size, designed on simple lines. As they developed in scale and importance, the sculptured panels gave place to painted ones, and the many compartments into which they were divided became enclosed in Gothic frames and traceries richly painted and gilded. This type of Retablo, however, had a short existence; the inherent Spanish feeling for the realistic, strongly countenanced by the Church, revived the old tradition of combining both arts. The sculptured panels appeared again, and at the end of the fifteenth century, when the vitality of Spain was at its highest, the carvings were entirely coloured and gilt.

The method adopted is most interesting. Different sets of artists completed these polychromes. First, and most important, there was the tracer—the chief artist—who furnished the design both for the whole work and its ornaments of statuary; he also superintended its execution, and was the architect *de facto*. To him the sculptors, ornamenters, master masons, and master carpenters were subordinate, but the painters, damaskers, and gilders were free from his control.

With the advancement of time huge Retablos rapidly arose, soaring up to prodigious heights. All that had been expressed in earlier examples, by painted groups on panels, was translated into sculpture. The general impression conveyed to the mind, on observing these Retablos, is less pleasing, and the eye is fatigued on attempting an examination of their detail.

In Mr. Prentice's opinion the most successful of these huge works is the Retablo at Toledo Cathedral, in the Capilla Real, designed by Philip de Borgoña. The composition presents a playful variety of forms, combined with a vigour of detail that is very satisfying. It may be noticed that there is a certain variety in the spacing of the compartment, and that the whole work bears distinctly the impress of no ordinary designer. The character of the draperies alone would suggest a northern artist. Each Spanish town had a type of Retablo peculiar to itself.

Wood-carving as a favourite art remained in Spain for several centuries, after the Spaniards learned to excel, under the skilled tutelage of the great masters from Germany and Flanders. The art of carving became highly honoured. An early ordinance of Seville referring to wood-carving, masonry, and building esteems it "a noble art and self-contained, that increaseth the nobleness of the King and his Kingdom, that pacifieth the people, and spreadeth love among mankind conducting to much good."

The silversmith's art attained a place of equal importance.

In conclusion: after an examination of these magnificent works, it seems sad to realise that the glory of Spain has departed.

Whether we wander through the deserted cities of Castille or make a pilgrimage to some remote cathedral, it is manifest that in matters of art this once powerful empire has never ceased to exist, but still continues to rouse our wonder and admiration. Amidst crumbling decay still stand the monuments of Spain's greatness. If nowhere else in the world such glorious works of art are to be found amidst such poverty, let us hope for a speedy revival in Spain of those factors which will raise it once more to its former

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position amongst the nations and cause it to take its place amongst the highest artistic circles of the world.

DISCUSSION.

Mr. W. R. Colton, A.R.A., said it was very easy for him to propose a vote of most sincere thanks to Mr. Prentice for his very charming and carefully thought out lecture. But he was afraid that beyond the performance of that appointed task there was an idea that the proposer should, as it were, rather drastically criticise the performance in detail. He was afraid he had not had the time to criticise the delightful lecture since receiving it. Moreover, he had always been profoundly ignorant of Spanish sculpture. Speaking from the sculptor's point of view, he felt that most of what he had seen on the screen suggested gilding the lily and a crowding up of detail to such excess as to make the whole ineffective. And beyond that the architect, or the master tracer, as Mr. Prentice told them he was called, had the sculptor under his direction, for the painter was free and was guilty, after making this excess, of colouring it vividly and finally gilding it. The effect may be barbaric, but one regrets there was not more reticence, better arrangement of spaces and decoration. But it is reported that one of the most distinguished sculptors of the present day obtained his inspiration from studying Spanish sculpture. That may be true, for it was not so much in the sculpture itself where the objection lies, but to the crowding-up and the too small detail. The Spaniards were evidently very much like what we are to-day with their artistic quarrels and differences of opinion.

Professor Gerald Moira said he felt that in the old Spanish times painters came a bit by their own. To-day sculptors are having everything their own way; but in those days the painters were allowed to have a whack at sculptors and paint over all their things. That must have been a great pleasure. There could be no doubt the feeling one has in seeing all these things is that there is a terrible overcrowding. But it was chiefly due to a desire to make an original artistic production.

Mr. A. T. Bolton said it was over twenty years ago since he had followed Mr. Prentice's footsteps in Spain. He did not think Spain was the place for a young architect to go to at the commencement of his studies. But it was a country where one sees things which are extraordinarily satisfying after one has seen the others. The conclusion one comes to is that painting is the big art in Spain. The Romanesque is the finest architecture there, and examples at Orvieto and Leon are extraordinarily interesting. It shows what a wonderful period the Romanesque was, and how they were on the verge of great works. The upper part of Leon Cathedral had been carried out at the time of the Renaissance; but when he was there it was being replaced by Romanesque stonework—a good deal of that sort of thing was done in Spain. Salamanca was the Oxford of Spain: the central tower of its cathedral inspired Richardson for one of his New York churches. The reredoses were one of the most characteristic things in Spain. When one enters a dark cathedral and sees at the end an enormous object which is represented by the reredos entirely gilded, it becomes as a piece of metal and cannot be judged either as stonework or as colour. Their intense craving for realism in sculpture must be understood if Spanish art is to be understood, whether architecture, literature, or painting. The whole country is rich, but it was necessary to study it beforehand. There are none of those delightful casual things to be met with in Spain which one finds in other countries. In Spain one goes from one town to another, and except for an occasional big castle the country between is a desert.

Mr. J. D. Crace could not help regretting that a word had not been put in for the painters. The reredoses are not strictly shown as sculpture; they are the decorative focus of a church. Coloured sculpture was almost a speciality of Spanish work. The very remarkable carved figures in wood, and painted, might be emphasised both for their vigour and their execution. He believed there were a few of the figures in South Kensington. When in Spain he had been very much struck by the overcrowding not only as regards the reredoses, but also on the exterior. He did not think the architecture gained as it might have done if the sculpture had been more restricted and recognised better the intention of the architect. Yet it was extraordinarily effective and bold, especially the heraldry, of which Spain was the place to study. The execution of the sculpture never attained to the fineness of the French work. There was none of the loving care which the French or the Italian lavished. He agreed with Mr. Bolton that Spain was not the place for the young student.

Mr. Ernest Newton (President), in putting the vote of thanks, regretted he had never visited Spain, for photographs only gave a very general idea. One has to imagine such things as the sunlight and the local colour. Mr. Prentice had first introduced them to Spanish architecture when he published his sketches of Spain some years ago. They had been told that our students should not go to Spain, but the British architect possessed a great power of assimilation and a very sturdy digestion, so that even if, after the war, they did go there, he felt sure British work would always retain distinctly British characteristics.

A vote of thanks was then passed with acclamation.

Mr. Prentice having acknowledged the vote, the meeting terminated.

The next meeting will be held on Monday, March 1, when the election of the Royal Gold Medallist for the current year will take place and will be followed by an election of members and other business.

ROYAL ACADEMY LECTURES: ARCHITECTURE.—I.

THE course of four lectures on "Architecture" to be delivered this year at the Royal Academy by Professor Edward S. Prior, M.A., A.R.A., Slade Professor of Fine Art in the University of Cambridge, was commenced on Monday afternoon last, February 15. The second lecture was given on Wednesday, and the third and fourth will be given on February 22 and 24. The general title of the course is "The Thousand Years of the Flemish Arts," and the particular title of the one here reported is

I.—THE ROMANESQUE AND GOTHIC ARTS OF THE LOW COUNTRIES.

To Britons the artistic treasures of the Flemish cities have, said Professor Prior, made them a holiday ground for centuries of our artists, and apart from the attention now focussed on them, there has always been for English students a special value in the Flemish story of the arts, because we recognise it as bearing on the English story. We note from time to time special influences which have linked English architecture, sculpture, and painting with those of the Low Countries. In art as in commerce there has been, as Seeley said, a *magnus intercursus* between England and the Low Countries—a great running to and fro. Artists and craftsmen have passed from the Thames to the Scheldt, and from the Scheldt to the Thames, in a practically uninterrupted stream since Charlemagne sent to York for Alcuin as director of his educational bureau. The Low Countries' commerce has been the conduit by which, as it were, two separate streams of artistic influence have flowed into English art. A rough generalisation distinguishes these two streams as Teutonic and Romance.

In the story of European art the Flemish individuality (which we may justly call the Belgian quality) counts as forming and captaining for many generations the art movement of Northern Europe. It made, we may say, the Northern Renaissance. It was the purpose of the present lecture to explain how the circumstances of the Low Countries and the conditions of the peoples, the changing of political connections, materially contributed to a certain special quality of Flemish art, and as a consequence to the trend of the North European production of art.

In a broad sense there were three distinct periods in which the influence of the Low Country art was dominant.

First were the centuries of the early monastic civilisation of Western Europe, its culminating date about the year 1100, but with its power scarcely diminished for another century.

Secondly, after that thirteenth century there grew up, following an interlude of English supremacy, the Flemish Gothic era, that of the fifteenth century, which, under Burgundian patronage, expressed itself in sculpture, in painting, and commercially in the luxuriant arts and crafts of Bruges, Ghent, and Brussels. The culmination of this second era as regards the Low Countries may be placed c. 1500 and the sixty years following.

The wars of religion coincided throughout most of Europe with a crisis in the succession of the arts. After the middle of the sixteenth century the Dutch Netherlands separated from the Flemish and advanced to an art of their

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own. On the other hand, the Netherlands attached to Spain achieved another period of artistic supremacy.

It was the early monastic art of the Germanic civilisation, with Aix-la-Chapelle as its centre, that in the eleventh and twelfth centuries found expression in the Ardennes' slopes, dying down into the sandy plains of Brabant and Flanders. Then, after 1150, civilisation came the other way; the French Gothic influence was centred in Paris, and in the thirteenth century the architecture of the Ile de France was the controlling influence in the country of Flanders, in Hainault, and Brabant as much as in Picardy—for at this date Holland had hardly emerged from the sea. But when in the fourteenth century the sun of Paris was behind a cloud, then for 200 years the great towns of Flanders, Ypres, Bruges, and Ghent were the centres of European trade, to which after 1383 the Lordship of Burgundy gave political importance. The art of the Low Countries supplied all Northern Europe, and gave to the Northern Renaissance a quality that held for 300 years, till its supremacy was displaced by the French era of Louis Quatorze in the seventeenth century.

Their artistic supremacy thus had two phases—first, the Flemish Gothic phase, and secondly the Flemish Renaissance phase. These two phases had this in common—that in either case they were exhibited chiefly in religious furniture—in either case the artistic effort was at the service of religion. It was in the medium of this Northern Catholic Renaissance that the Flemish school of painting, that of Rubens, established itself. From 1550 to 1650 Antwerp was the most important city of Europe.

If the epithets monastic, commercial, and pictorial are affixed to these three phases respectively they will represent roughly the agencies by which the several diffusions of Flemish style came about.

In his opening lecture Professor Prior described the first centuries in which the art of the Low Countries developed the peculiar quality of chaftsmanship that was to make its especial character.

As already mentioned, Aix-la-Chapelle, or Aachen, was the centre of the Low Country civilisation in the eighth and ninth centuries. Charlemagne's chapel there, itself modelled on San Vitale at Ravenna, was the start from which monastic building of West Europe entered on its notable career, culminating in the final triumphs of the Gothic cathedral. It was the accepted model, and we constantly read that such and such a church was planned to resemble it. The great example of Flemish Romanesque is the cathedral at Tournai; and this used the Aix-la-Chapelle not only for the east end, as did the Mid-French churches, but for the transeptal wings. Following Tournai, other churches of Flanders, such as Cambrai and Valenciennes, had this same planning of great apsidal transepts. The influence of their planning spread into the French domain of architecture, where the cathedrals of Noyon and Soissons have these apsed transepts. And remember it was in Noyon and Soissons the first inventive advance of the French Gothic was made.

Flemish style was therefore in its twelfth-century development an important province of the Romanesque development which was to produce Gothic. The transeptal towers of Tournai had in England their cognates in our cathedral of Canterbury, as this was enlarged under Prior Ernulph in 1090, the point being that such towers attached to transepts are not of Norman design, but come to us from the great district of Cologne architecture which Tournai represents.

Tournai was distinguished in the eleventh and twelfth centuries not only in its wide building influences, but also for its sculpture of marble and for its bronze work. For centuries its schools of sculpture and metal-work headed the arts of the Low Countries, issuing from Charlemagne's crafts school. The cloister arts included the painting and writing of manuscripts, the working of ivory plaques and all kinds of decorative jewellery, as applied to sacred objects or vestments. The hills that border the plains of Belgium and line the rivers that flow from the Ardennes supply material for decorative sculpture such as no other district of North Europe possesses. That Tournai tomb slabs, fonts, and sepulchral monuments were objects of wide export is proved by the many examples in England. The same was true of their shrine caskets.

However, the latter part of the twelfth century and the beginning of the thirteenth introduced a new element in Flemish style. The monastic bent that had dominated it is replaced by what we may call the masonic, taking that title from the Master Mason of French architecture who is so often wrongly called architect. Flemish church building, then, comes into connection with that outburst of constructive development which in North-East France began the career of French Gothic. The Sketch Book of Villars d'Honnecourt illustrates how Franco-Flemish masoncraft of Noyon, Soissons, and Laon obtained its peculiarities from the Tournai marble and stone sculptors.

In England we developed the Flemish marble-shafted style. But in the Low Countries themselves the thirteenth-century architecture passed under the French direction. The school of North-Eastern France dominated it. In its full development French style is represented by the great quire of Tournai, built at the end of the thirteenth century. This, as with the great quire of Beauvais or Le Mans, replaced the Romanesque apse, and, like them, it is a lantern of glazed stonework.

The Flemish thirteenth century had its church style under French control. Yet in that century the building that was to be specially expressive of the Flemish genius developed its most important monuments. The civic building of the Belgian cities was the architecture of citizens and craftsmen. It was this on a scale such as no other country has produced, for the palaces of Italy represent a different category of architectural expression.

Architecture itself was in the hands of the consummate Flemish craftsmen to elaborate itself with a decorative skin as inconsequential as the arches and crockets of their silversmiths. If French structure and plan remained to the end the underlying framework of Flemish churches, in their civic building the Flemish masons produced that surfacing of Gothic-constructed detail which in the fifteenth century was to develop into Flamboyant. Such rich late phases of Gothic as at Oudenarde were really the Gothic Baroque. The surfaces of architecture in such buildings have become frills and chiffons. They have monopolised the interest of art, and consequently develop as the fanciful forms of abstract design.

As early as 1300 the English masons began to make fancy-shaped arches. The keystone of an ogee arch is a negation of arch construction, for its shape denies the science of stability. But once when tracery was accepted as ornament it could take any fanciful form. Another example of the same tendency was the fourteenth-century use of the gable and pinnacle. The English masons multiplied their canopies and elaborated their diminutive framings, putting niche on niche and frilling them with cusps, crockets, and finials.

The absorption of English themes and then the use which the guild crafts of Flanders made of them is expressive of the political and social intimacy between the two countries. The four-centred arch was a peculiarity of English Perpendicular style which the Flemish builders, alone among the Continental builders, have borrowed from us. The English tabernacled niche became the constant stylistic convention of Flemish Gothic. In fact, the various features of decorative design, the resolution of architectural items into orders of ornamental sculpture, devised by the English masons, passed in the second half of the fourteenth century into the habit of Flemish building. They were to pass on in the fifteenth into France as Flamboyant.

Yet, said Professor Prior in conclusion, the absorption of English detail was but an episode, and the essential character of Flemish style was to appear as a whole system of design which was characteristically Flemish.

THE SOCIETY OF ARCHITECTS.

A MEETING of the Society of Architects was held on Thursday, the 11th inst. Mr. E. C. P. Monson, F.R.I.B.A., President, occupied the chair. After some preliminary business Mr. Alban H. Scott, Vice-President, read a paper entitled

THE CONSTRUCTION AND PROTECTION OF BUILDINGS IN RELATION TO FIRE.

With all the means at our disposal to-day for preventing and fighting fires, we still have appalling loss of life and damage to property through fire. Every year improvements are made in all branches to prevent such loss, and again every year seems to bring forward also more hazardous trades, more concentration and other causes of large loss. The development of the uses of celluloid and other inflammable substances has alone increased many risks.

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Again, do not all the precautions taken add somewhat to people's carelessness or apathy, perhaps through a feeling of oversecurity? If only carefulness increased as the cube of the precautions, we should, indeed, see a great reduction of outbreaks of fire.

In giving a paper of this description, it would be impossible to do so without referring to that excellent institution, the British Fire Prevention Committee. It is only when one commences to study their valuable publications in detail that one fully realises the enormous ground such a committee covers; from the testing of flannelette up to the testing of heavy reinforced concrete floors, and special commissions and reports on what France and Russia have done in fire precautions.

It should always be remembered that every piece of wood and other combustible material used for the construction or in the fitting up of a building furnishes fuel for the fire.

In reading through the London Building Acts with fire precautions specially in mind, it is pleasing to note what great care has been taken generally regarding the construction of buildings from the fire point of view. In spite of all these precautions, however, additional provision for escape of occupants in case of fire should be provided and the powers given to the Council still further increased in this respect.

It would be advisable for the London Building Acts, and in fact all our by-laws throughout the country, to make it compulsory that all external walls and internal partitions and floors are constructed of fire-resisting material. This sounds perhaps rather a startling proposition, but if we just consider for a moment the following figures, it does not perhaps mean quite such a drastic expense as one would think from an outline statement.

The whole of the following costs have been based on the cost of materials current last week:—

	Per Ft. Sup. Pence
Floors. Wooden floors suitable for domestic buildings taken in spans of 12 feet	11.3
Fire-resisting floor, ditto	17.3
Wooden floors for workshop at 200 lb. super load per square foot. Spans 10 feet	28.9
Ditto, ditto. Fire-resisting floors	34.4
(Basis of last two items taken for floor 30 feet by 100 feet.)	
	Per Yard Sup. Pence
Cost of wood-framed partition, plastered on both sides, per yard super	72.8
Cost of fire-resisting partition, plastered on both sides	72.0

Although there has been, through various causes, such a levelling up of prices and gradual reduction in the difference of cost between fire-resisting and combustible materials, there is one point in the construction of work where this has not occurred quite so rapidly as one would perhaps desire—namely, in the construction of windows. Wooden windows have always been very much cheaper than steel windows, and, unfortunately, there is still a big difference. (This does not refer to steel sashes suitable for factories and workshops; these are cheaper than wood.) The London Building Act should perhaps be considered one of the wonders of the world. There is no Act in Great Britain more courteously, fairly, and sensibly interpreted and administered. It would, said Mr. Alban Scott, be a great mercy to the building owner, the community generally, and to architects if these Acts were in force through the country (with certain modifications), and administered by district surveyors of the same standard and training as in London.

Mr. Alban Scott then put forward suggestions as to amending various specified clauses in the London Building Acts which relate to fire prevention in its various aspects. For example, he considered that Clause 68 should read that all floors and staircases, irrespective of the size or use of the building, should be constructed of fire-resisting material, and further, the top floor constructed of such strength that if the roof is not also constructed of fire-resisting material it would successfully withstand the collapse of the roof in case of fire. Many fires have, he said, become a total loss owing to the roof or one floor collapsing and causing the whole series of floors to collapse like a pack of cards unsupported.

The paper then proceeded to slightly touch on the insurance companies' requirements. As to fire-resisting construction, they have various standards, such as Standard 1A, Standard 1B, Standard 2, and Standard 3. The standard 1A deals with cotton, flax, woollen and worsted mills. The standard 1B requires that buildings be not more than 80 feet in height, and cubic contents of any one compartment not to exceed 60,000 cubic feet.

I.—*Standard* 1B.—Walls to be of brick, or terra-cotta and concrete, not less than 13 inches thick, but if plain concrete not less than 20 inches.

Standard 2.—Walls to be of brick, or terra-cotta and concrete, not less than 13 inches thick, but if plain concrete not less than 13 inches thick.

Standard 3.—Walls to be of brick, terra-cotta or concrete not less than 9 inches thick.

II.—*Standard* 1B.—Partitions to be of incombustible material, excepting only office enclosures, which are to be of hard non-resinous wood.

Standard 2.—Partitions to be of incombustible material, excepting only office enclosures, which are to be of hard non-resinous wood, but partitions of metal lathing and plaster on wood frame allowed.

III.—*Standard* 1B.—All flues to have brickwork not less than 9 inches thick towards the interior, and no woodwork to rest in or be plugged into the brickwork of any flue.

Standard 2.—All flues to have brickwork not less than 9 inches thick towards the interior, and no woodwork to rest in or be plugged into the brickwork of any flue, but if rendered with 1-inch cement brickwork may be 4½ inches.

IV.—*Standard* 1B.—Openings in external walls not to exceed half the area of any storey.

Standard 2.—Openings in external walls not to exceed half the area of any storey.

V.—*Standard* 1B.—All window frames and sashes to be of iron or other hard metal, and all windows above ground floor to be glazed with glass not less than ¼ inch thick in sections not larger than 2 feet super., and all openings above the ground floor opposite, and within 20 feet of any window or other glazed opening, and within 20 feet of any roof to be protected by "fireproof" shutters or doors.

Standard 2.—All window frames and sashes to be of iron or other hard metal, and all windows above ground floor to be glazed with glass not less than ¼ inch thick in sections not larger than 2 feet super., and all openings above the ground floor opposite, and within 20 feet of any window or other glazed opening, and within 20 feet of any roof to be protected by "fireproof" shutters or doors, but in lieu of "fireproof" shutters wired glass may be used subject to certain conditions.

VI.—*Standard* 1B.—Floors to be brick arches, terra-cotta, fire-clay, or concrete not less than 6 inches thick.

Standard 2.—Floors to be brick arches, terra-cotta, fire-clay, or concrete not less than 6 inches thick.

Standard 3.—Floors to be brick arches, terra-cotta, fire-clay, or concrete, but 3 inches thick.

VII.—*Standard* 1B.—Wooden flooring permitted if laid close to floor with no space.

Standard 2.—Wooden flooring permitted if laid close to floor with no space.

Standard 3.—Wooden flooring permitted if laid close to floor with no space.

VIII.—*Standard* 1B.—Solid wood floors, not less than 9 inches thick if ceiled with plaster and covered with floor boards (no space), are also allowed provided water-proof lining is provided underneath the floor boards.

Standard 2.—Solid wood floors, not less than 9 inches thick if ceiled with plaster and covered with floor boards (no space), are also allowed provided water-proof lining is provided underneath the floor boards.

Standard 3.—Solid wood floors, not less than 6 inches thick if ceiled with plaster and covered with floor boards (no space), are also allowed provided water-proof lining is provided underneath the floor boards, and all supports and stanchions and other structural metal work covered with plaster or concrete, &c., ¾ inch thick.

IX.—*Standard* 1B.—Scuppers to carry off water to be provided of 21 square inches every 12 feet apart on each floor (buildings in C. of L. or L.C.C., scuppers not essential).

X.—*Standard* 1B.—Roofs to be entirely of incombustible materials as for floors, but not less than 4 inches thick. Glass not less than ¼ inch thick, in sections not exceeding 36 square inches, set in hard metal and wired glass and electro copper glazing considered as incombustible.

Standard 2.—Roofs to be entirely of incombustible material; glass allowed in roof if not less than ¼ inch thick

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not exceeding 5 feet super., or wired glass or electro copper glazing in each case set in hard metal outlets to meet requirements of Factory and Workshop Acts allowed subject to certain conditions.

Standard 3.—Having no combustible material in its construction. Flat roofs of similar construction to solid wood floors, but 4 inches thick. No floor boards, but on upperside covered with metal, concrete, asphalte, or a composition of asbestos and other incombustible mineral ingredients or vulcanite having a coating of at least 2 inches of sand or gravel.

XI.—*Standard* 1B.—*Structural Metalwork.*—All columns and stanchions to be covered with brickwork or porous terra-cotta 2 inches thick, or concrete or plaster 1½ inches thick, keyed into metal supports and protected for a height of 4 feet from floor where cement concrete or plaster only used. All other metal work, including roof work, to be encased in porous terra-cotta 2 inches thick, securely anchored, or cement concrete or plaster 1 inch thick, keyed into metal supports. Provision to be made in all cases for expansion.

Standard 2.—All columns, stanchions, girders, joists, lintels, and other metal work (excluding framework of roofs), to be cased 2 inches thick or with 1 inch concrete or plaster as Standard 1B.

Standard 3.—See previous note.

XII.—*Standard* 1B.—*Roofs and Ceilings.*—No lining of wood or textile fabric allowed to any part of walls, partitions, ceilings, or roof.

Standard 2.—No lining of wood or textile fabric allowed to any part of walls, partitions, ceilings, or roof, except dado allowed in wood not exceeding 6 feet high in offices, cellars, staircases, and passages provided not used for storage.

XIII.—*Standard* 1B.—*Floor Openings.*—Only holes for driving shafts, iron or earthenware tubes for electric conductors, and these to be specially dealt with.

Standard 2.—Only holes for driving shafts, iron or earthenware tubes for electric conductors, and these to be specially dealt with.

Standard 3.—Only holes for driving shafts, iron or earthenware tubes for electric conductors, and these to be specially dealt with.

XIV.—*Standard* 1B.—Staircases practically as required for emergency exits by L.C.C. Where staircases and hoists extend to top floor, enclosure must be roofed with glass roof protected (subject to certain restrictions in L.C.C. area).

Standard 2.—Staircases practically as required for emergency exits by L.C.C. Where staircases and hoists extend to top floor, enclosure must be roofed with glass roof protected (subject to certain restrictions in L.C.C. area).

Standard 3.—Hoists to be enclosed in walls 6 inches concrete or R.C. 3 inches thick with fire-resisting doors. Sprouts or trunks not exceeding 4 inches square feet in area constructed of iron ⅛ inch thick and shutters to every opening.

XV.—*Standard* 1B.—All belting and rope races to be enclosed as for staircases and hoists.

Standard 2.—All belting and rope races to be enclosed as for staircases and hoists.

XVI.—*Standard* 1B.—Shafting through walls to fit closely into wall, and to have closed wall boxes leaving no open space.

Standard 2.—Shafting through walls to fit closely into wall, and to have closed wall boxes leaving no open space.

Standard 3.—Openings up to 12 square feet with double iron or metal covered trap doors (special construction).

XVII.—*Standard* 1B.—*Pipes, &c.*—No wooden casing allowed. All pipes (except water pipes not exceeding 1½ inches diameter) to be of hard metal.

Standard 2.—No wooden casing allowed. All pipes (except water pipes not exceeding 1½ inches diameter) to be of hard metal.

Standard 3.—Staircases having steps and landings of brick, stone, iron, concrete enclosed with walls, this applying also to vent shafts, all openings being protected.

XVIII.—*Standard* 1B.—*Communicating Compartments.*—Two or more compartments (constructed according to the rules), may communicate provided their aggregate cubical contents do not exceed 60,000 cubic feet. When cubic contents exceed 60,000 cubic feet communication only allowed across a fireproof compartment, built up from the basement with walls of solid brickwork, and having all openings protected by fireproof doors at least 6 feet apart.

XIX.—*Standard* 1B, *Standard* 2, *and Standard* 3.—*Reinforced Concrete.*—Reinforced concrete buildings allowed subject to the usual precautions. (*a*) The requirements as to proportion of cement in the concrete is somewhat ambiguous—viz.: "In the proportion of 6 cwt. of cement to each cubic yard of concrete." (*b*) All external walls to be not less than 6 inches thick (Standard 3, between piers 5 inches thick). (*c*) Division walls 8 inches thick (not Standard 3). (*d*) Party walls 13 inches thick except if adjoining reinforced concrete building, then 8 inches thick (Standard 1 only). (*e*) Floors 4 inches thick if lined with fire tiles 1½ inches thick (not Standard 3). (*f*) Floors 5 inches thick and supported on beams and columns of reinforced concrete (Standard 3, 3 inches thick). (*g*) Roofs 3 inches thick. (*h*) No metal to be nearer than double its diameter, but not less than 1 inch and need not exceed 2 inches. (*i*) Enclosures and staircase and hoists 6 inches thick (not Standard 2). (*j*) Fire-resisting compartments to have walls 8 inches and floor 5 inches thick (not Standard 2).

Under Standard IV., the party and external walls to be not less than 9 inches thick of brickwork, &c., and no combustible material to enter into any part of construction except the roofing, doors, and window frames. External walls of reinforced concrete 5 inches thick. Hoist enclosures to be of incombustible construction. Staircases may have steps and landings of hard wood.

The insurance companies' regulations as to fireproof doors and shutters are many and various; they deal with iron and steel (sliding and hinged), metal-covered doors (sliding and hinged), "check-fire" doors (sliding and hinged), ferro-concrete doors, &c.

The openings must not exceed 56 feet super., and not more than 7 feet 10 inches in width, or 9 feet in height. In some cases not to exceed 45 feet super, and not more than 6 feet in width or 8 feet in height. In other cases 35 feet super, and not more than 5 feet in width or 7 feet in height.

These rules generally are very careful as to fixing, and little details all of the greatest importance.

The use of cast-iron for door parts or fittings is not allowed.

Each door must have a metal plate attached giving the date of its erection, and in some cases the name of the maker. The fixing and method of securing fireproof doors and shutters is of the utmost importance.

The proper maintenance of this work should receive greater care than usual. Mr. Alban Scott said that within the last few days he was asked how long a "fireproof" shutter would last, and his report was five minutes. They were somewhat surprised to find that a loose wooden separating slip 6 inches wide had been inserted in lieu of a properly secured double rebated steel stanchion.

Many risks would be avoided, and much loss saved if all buildings were inspected and reported on every six or twelve months. Unfortunately, most people rely upon the insurance companies' inspections, which is not fair to any of the parties interested, particularly from the employees' point of view.

All the particulars given above as to insurance companies' requirements are of course subject to other rules as to special work, artificial lighting, &c.

There are many considerations to take into account when settling what form of construction to adopt (the local authorities make requirements as to exits for employees, and the insurance companies more particularly as to fire risk, but generally the better the insurance risk so is there less risk to employees). One immediate point is the comparative first cost, but this should be considered in relation to the reduction of insurance premium, and also the possible inconvenience to the works, and the loss of profit and loss of business connection. It is only the owner who can determine the value of the latter points. The insurance company determines the question of premiums. It is interesting to note that premiums can, under certain circumstances, be reduced as much as 60 per cent. This where large and valuable stocks are kept may be of great importance.

This leads on to the question of precautions for extinguishing fires, and big reductions in premiums are possible if care is taken as to these precautions, ranging from 5 to 40 per cent.

For fire extinguishing we have, speaking broadly, the following: Chemicals (dry and liquid), water (high and low pressures), steam, sand. And in addition various methods of smothering with sheets or blankets formed of various materials.

There are comparatively few large chemical machines, but generally these appliances take the form of small portable extincteurs, and no doubt in very many cases they have proved exceedingly useful, and saved big loss.

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There are a very large number of these on shelves ready to be used in case of emergency; it would, however, be interesting to know the percentage of these that would be properly used, and undoubtedly their efficiency is greatly reduced owing to the lack of knowledge of proper use. Fortunately, the insurance companies have now standard requirements as to the manufacture of portable chemical extincteurs, including that they shall be stamped with maker's name, year of manufacture, capacity, and must bear a declaration that they have been tested to 350 lb. per square inch.

Water.—In spite of all scientific progress, water still maintains the premier position.

Science has, however, helped us to apply it in many ways, such as buckets, hand pumps, hydrants (private and public), with ordinary and high pressure, sprinklers, drenchers, &c.

Buckets, if judiciously placed and kept in their proper place, with water in them, are very valuable. If the buckets are provided and left to take care of themselves they may prove highly dangerous, as delay may cause loss of life, and heavy loss of stock. Even where certain people are put specially in charge of fire equipment, most constant and careful supervision is required.

If buckets are provided convenient draw-off taps for fresh supplies should be provided, and where rounded bases are provided to the pails, each draw-off tap should have a hook to hang the pail on during filling. Rounded bases have many disadvantages, and one advantage—viz. that they are not so readily taken down and used for other purposes.

Buckets of not less than two gallons' capacity, and three buckets to every 250 feet super should be provided, for which 5 per cent. on the reduction of premium is obtained.

Small portable hand pumps with water container are exceedingly useful, and should be provided more frequently.

Hydrants.—The degree of usefulness of private hydrants depends greatly upon the pressure in the mains. Generally speaking, the pressure is very low, varying from 20 lb. upwards. With 40 lb. pressure, good and useful work can be executed in skilled hands.

In laying down a hydrant installation connection to two different mains should be made if possible, but this is rendered still more valuable if such mains are fed from different sources. Where such double connection is made, back pressure valves are required. Pressure gauges should be put to each end of the hydrant mains. These should be frequently examined. It is also absolutely essential that the hydrant stands should also be periodically examined—that is, examined fully, hose connected, turned on and so kept in such a condition that immediate use can be obtained.

A general store, as central and as free as possible from fire risks, should contain additional hose and other equipment, including hatchets, hammers, crowbars, and the usual fitments. In works where there are several or many separate buildings, a detached central fire station is of most vital importance; this, of course, should be followed with the training of a certain number of the staff, and proper fire drill should be held throughout the works. Any employee who does not at once leave their work and proceed quietly and orderly to their assigned exit must be immediately dismissed. If this rule is not made and most rigidly enforced, fire drills may become a danger in lieu of a help. The necessary number of men should be put on point duty to switch off all fans, motors, gas, and similar appliances.

To come back to hydrants, the pressure on the private mains should, where possible, be fitted with an automatic pump to increase the pressure. This not only increases the height to which water can be thrown, but the quantity of water discharged in a given time is also increased with very high pressure. Special apparatus is required to hold the branch pipes. This increase of pressure has the further advantage of enabling a greater number of connections being taken from one hydrant; it is a great mistake to overload any hydrant or main—it is better to have a fewer number of efficient jets rather than a greater number of indifferent jets.

Sprinklers.—The insurance companies' rebate on premiums where sprinklers are installed varies according to standard of installation and other circumstances. The rebates, however, are in themselves an automatic testimonial for their efficiency, varying from 30 per cent. to 70 per cent. of the premium.

The arrangement in general is that every part of the floor area is covered by the action of sprinklers.

According to the standard required, the water supplies are connected to (1) town main, (2) elevated tank, (3) pressure tank, (4) pump, (5) injector apparatus, (6) elevated private reservoir, the requirements varying according to standard aimed at.

Two systems are in use, one the dry system—that is, the pipes throughout are not charged with water, but immediately a sprinkler goes off the water rushes through. The other system is where the whole system is constantly charged with water, and consequently immediately a sprinkler goes off the water comes into action.

The sprinkler heads are arranged to open at any temperature, but generally arranged for 155° F.; where, however, the requirements of the business demand, a higher temperature is fixed.

These heads have metal fasteners which fuse at the given temperature, and immediately give access for the water to discharge, this discharge being in the form of a cone, generally striking on the ceiling first and discharging in the form of a fire curtain of water, thoroughly drenching everything within its area, and at the same time, owing to its fine spray, practically acting as an oxygen excluder to the enclosed area, this being perhaps just as important a function as the actual water.

There is no fire risk (apart from damage caused by explosion) where sprinklers would not save the building, even if formed of wood.

Drenchers.—Fittings known as "drenchers" act in a similar way to sprinklers, but are generally placed just over the outside of the windows to prevent the fire spreading from one building to another.

If a little care and attention is given to the designing of a building with the idea of sprinklers being installed, the actual construction need not be less economical, and if the building is so designed considerable cost can be saved in the installation of sprinklers, as the rules demand that sprinklers shall be placed, generally speaking, about 10 feet centres, but this is subject to the depth of beams and for other similar obstructions on the ceilings. All spaces, such as voids in roofs, must also be provided with sprinklers, and with regard to the pressure of water required or desirable it should be remembered that all pressure is measured as running pressure. In addition to the normal pressure obtained by the head of water, increased pressure can be obtained by installing automatic pumps. To all sprinkler installations pressure gauges must be fixed together with a rather complicated system of valves, which, however, are not complicated in working.

Every installation must be fitted with approved automatic alarm signal which gives notice immediately any sprinkler is opened, and this alarm remains ringing as long as any sprinkler is in operation.

Steam.—The use of steam for extinguishing fire could and would no doubt be used to a greater extent if it were not that serious danger were attached to its use. It also has this serious disadvantage—that whereas water sprinklers can safely act automatically, serious accidents might result from steam being applied automatically in case of fire. Even if a steam installation is put in it must be only under the charge of one man, and some considerable delay must ensue before he turns the valve on, as it would be absolutely imperative for him to make sure that every part of the building was clear of employees. It is questionable if such an installation would be allowed by the authorities.

Sand.—Sand, if used at the very early stages of the fire, is exceedingly efficient, but its method of application—namely, by pails or similar means of throwing—curtails its action very considerably, as there are no means of applying it from a distance with any degree of accuracy, and it would of course lack a constant supply of application, but certainly a proportion of fire buckets should contain sand in lieu of water.

Automatic Fire-alarm Installations.—Automatic fire-alarm installations, apart from the automatic alarm attached to sprinklers, have progressed very considerably, and can be so arranged that they not only give fire alarms to the users of the premises, but keep also directly connected to a public fire station. These are generally installed upon the principle of thermostats, working with a variation of temperature, the whole being led to an annunciator which will immediately indicate where the fire has taken place. The insurance companies lay down very careful rules with regard to installations, and deal also with electrical work, testing, and maintenance.

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DISCUSSION.

Mr. James, in proposing a vote of thanks, said he was very pleased to hear Mr. Alban Scott praise so highly the London Building Act. It had always been a puzzle to him that that Act was not made universal legislation. When many years ago he was articled to a district surveyor he came into contact with its administration and was struck then by the very fair way in which it was worked. The Act itself, if anything, requires strengthening. The provincial theatre was the greatest death-trap that could possibly exist; he hardly knew of a single one which was safe, for they were constructed with an utter disregard to the safety either of the audience or of the unfortunates behind the curtain. The position was a very serious one. Indeed, it was a puzzle to him why the Government did not introduce some measure—and in this the Society of Architects might do something—which would bring about a more universal use of the London Building Act as it stands. A constant danger in warehouses arose in the fact that so many of the big doors opened inwards—a fact which had lost dozens and dozens of lives. Sprinklers had the objection that they sometimes went off at unexpected moments. He would have liked to hear in the paper some reference to the value of the wooden girders used twenty years ago, for they had in his experience proved more fire-resisting than unprotected iron girders.

Mr. S. Bylander said that he had known Mr. Alban Scott as a man taking an intense interest in the structural standpoint of building. The paper was full of facts and definite points, and he congratulated the Society on having it in their possession. He would add his own wish and hope that the London Building Act would be read in a more friendly spirit than it is at the present day; it was an excellent measure, and it was of great assistance to architects and engineers to have such definite requirements to meet. The layman does not necessarily know what is advisable for his own protection, and some practitioners were chiefly concerned in trying to reduce the cost of building. The Act, however, might be revised as it was too complicated at the present time with its amendments and further amendments. He hoped that among any useful revisions made would be those advised by the lecturer. It was all very well to have 2 inches of fireproof protection around pillars, but it was even more necessary to have that protection properly secured to the metalwork. In an heavy fire followed by the application of a stream of water the fire-resisting blocks, unless secured, will fall down. Another serious cause of failure in the London Building Act was that it allowed a building to be carried over an unprotected girder across a shop. Very often these girders are carried on piers cased in brick or stone and very weak structurally. Some regard should be paid to the strength of a floor in a building. The cubic contents of a room ought to depend on the strength of the horizontal divisions and not solely on the vertical. Steel work is very safe and satisfactory so long as it is properly constructed and protected. In employing concrete as a means of fire protection the architect should avoid limestone, for that material is not satisfactory. Wherever steel work is used proper inspection must be made. He, personally, was very much in favour of the introduction of sprinklers, especially on the overhead or elevated tank system. Preparations must be made for supporting these tanks 15 feet above the level of the highest sprinklers.

Mr. Edwin O. Sachs congratulated the Society on carrying on its business as usual at the present time. Mr. Alban Scott was keenly interested in fire protection owing to his industrial practice. One of the important features of his paper was that part of it dealing with insurance companies. The number of things to do were rather complicated under the London Building Act and they ought to be codified. Many of the suggestions Mr. Alban Scott brought forward should be considered by the powers that be. The word "fireproof" was a misnomer and should be replaced by "fire-resisting" and "partially fire-resisting." As far back as 1870 the word "fireproof" was considered fraudulent. His own impression was that concrete is one of the most useful features in modern construction from the fire point of view; but the user must be most careful in the selection of the aggregate. The idea that reinforced concrete floors are fire-resisting irrespective of the thickness of protection for the metal work was a serious one. The bonding-in of the concrete round the steelwork was of the utmost importance. Architects should be wary of bad aggregates—flints are a most deplorable thing to have in concrete. The great London Building Act of 1851 has really saved innumerable fires by its strict limitation of the cubic contents. Now these regulations have been widened, but saving clauses exist. Architects ought to avoid powder extinguishers which must not be considered in the light of ordinary extinguishers. Chemical extinguishers should be really sound. It was well to remember that sufficient buckets to contain 100 gallons of water can be purchased for the same money as a very small number of patent extinguishers.

Mr. Gamble (London County Council) agreed that the loss of life through fire was appalling, but he pointed out that the great proportion of it was due to such small outbreaks that they could hardly be called fires at all. The death of the majority of those burnt in London was caused by such things as the throwing of lighted lamps or clothing catching fire. Very few deaths occur more than 12 feet or 14 feet above the ground. As an old borough surveyor he could assure them that in some towns the by-laws were very exacting, and it was an open question whether the London Building Act or the by-laws in the provinces were the better. Much was to be said on both sides. The building surveyor or the district surveyor in London was an officer with very large powers and one who could be trusted to carry out a great deal of the work in the way in which it should be. The local authorities in the provinces, however, were mostly controlled by families, and they were very jealous that their officials should not enjoy too much power. It was not altogether a question of the Building Act being administered by a certain set of trained gentlemen, but of the existing by-laws being enforced. In many towns they were administered by those whose knowledge did not allow them to take a "give and take" attitude. As to the subject under discussion, he would say it was very little use to carefully put up a building if year by year alterations are made and holes cut in walls and floors, or if it is employed for the storage of materials for which it was never intended. It was of the utmost importance that buildings should be periodically inspected. In talking of pressure, it was well to remember that very good pressure can be got through a ½-inch pipe.

Mr. Ellis Marsland said architects must face the difficulties of constructing in steel. Terra-cotta was a very bad material to use as a protection because under heat it expanded and split, leaving the metal work to get hot, then buckle, and so cause the structure to collapse. The most useful protection was concrete which should be made of the right sort of coke breeze. However, fire-resisting a building is made, and however much care is taken, the owner will always have to reckon on danger from adjoining buildings. Fire-resisting glazing in proper frames should be used for the outside.

After some further discussion the vote of thanks was then carried by acclamation.

Mr. A. Alban H. Scott having replied briefly to the many points raised, the meeting terminated.

TRANSVAAL SCHOOL OF ARCHITECTURE.

LOCAL TRAINING AND INITIATIVE.

MR. J. F. BEARDWOOD, President of the Association of Transvaal Architects, recently opened at Johannesburg the first exhibition of drawings by the architectural students at the South African School of Mines and Technology. Among those present were Professor Lawn, formerly Principal of the School of Mines; Messrs. Howden, Grainger, Fleming, Walter Reid, J. M. Solomon, Ivor Lewis Waugh, and other leading practitioners, and Mr. G. Gordon Leith, A.R.I.B.A., a Baker scholar, and the lecturer to the architectural classes.

The President (Mr. Beardwood) said that the members of the Association of Transvaal Architects felt that the Act under which they were constituted had hampered them considerably, inasmuch as they were unable to use their funds for the purpose of encouraging science and art. He hoped, however, that an effort would be made in the near future to have the terms of the Act so altered as to enable them to use their funds for that object, and to offer bursaries and scholarships towards the advancement of the architectural classes at the School of Mines. He considered that it was a national disgrace that they had such little public support from the Government towards the advancement of this subject. Some while ago it was almost a *fait accompli* that a National Chair of Architecture was established, but the movement fell through at the last moment; he hoped it would be renewed at no very distant date. They meant to make every effort in their power to bring this about.

Professor Lawn said that they were now well advised by the Council of the Association of Transvaal Architects, and

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they were fortunate in securing the services of such an enthusiastic teacher as Mr. Gordon Leith. Such good, honest work was now being done that he hoped the time was not far distant when they would have a professor of architecture in a school of architecture worthy of Johannesburg and of South Africa.

Mr. Waugh said he looked forward to a very much greater expansion of the work accomplished by Mr. Gordon Leith and the students—work which he warmly appreciated. South Africa had had in the past to send its students overseas for training, but he was confident that South Africa would be able to produce architects in the same way as they had done in Australia by complete local training. The architecture of South Africa should have a thoroughly natural expression.

Mr. Gordon Leith, the lecturer, said that they were doing their best to work on progressive lines, and they would not be fettered by tradition. They were developing initiative and architectural expression based upon the direct study of the national resources of South Africa, and one which would comply with modern invention and economy.

LONDON COUNTY COUNCIL.

WORKING-CLASS DWELLINGS.

FURTHER reference was made at this week's meeting of the London County Council to the unsatisfactory position in the building world with regard to the erection of working-class dwellings. The Council was considering a report by the Housing of the Working Classes Committee dealing with the additional amount of working-class accommodation provided in London during the year 1913, and in closing the discussion the Chairman of the Committee, Mr. Bernard Holland, took exception to the suggestion that the Council was killing private enterprise by itself building cottages. "We cannot kill a thing which is already dead," declared Mr. Holland. Continuing, he said that the growth of buildings on the outskirts of London had practically stopped, and the position at the moment was extremely stagnant. One of the possible results of the war was that London might decline in population, and then there would not be the same urgent need for working-class dwellings.

This remark was received with laughter and cries of "No."

WILLIAM MORRIS AS A CRAFTSMAN.*

By MR. H. J. L. J. MASSE, M.A.

YOU have all heard of William Morris. Most of you know, or should know, something about him and his aims and objects, his work and his influence.

I will just refresh your memories by running briefly through his very busy life, and then refer to one or two questions of interest which arise out of it directly or indirectly—viz.:

(1) What was it that inspired Morris all through his life?

(2) What was his attitude towards the lesser arts?

(3) What do we owe to Morris—*i.e.* what was, and what has been, his influence both at home and abroad?

William Morris, poet, artist, manufacturer, Socialist, was one of the most striking personalities of the latter half of the nineteenth century, whether you consider him as a poet, as a designer, as a decorator, as a painter, as a producer or manufacturer, or as a Socialist; his influence as an artist, though he has been dead now some nineteen years, is still strongly felt. There is probably no part of the world that has not got stained glass, carpets, tapestries, textiles, and wall-papers from the firm of Morris & Co.

He was born at Walthamstow (then a village), in Essex, in 1834.

As a child of nine he used to ride half over Essex in search of old churches.

We know, too, that he used to ride about in a suit of armour in the forest.

This was due, no doubt, to his early knowledge and admiration for the writings of Sir W. Scott. He had read most of them by the time he was seven. He never remembered the time when he could not read for himself, for he had been delicate as a child and had fallen back on reading as a resource and amusement. He wrote as a boy and youth abominably badly. Later in life—*i.e.* when he took to illuminating his MS.—he formed an excellent formal hand, which he maintained for the rest of his life.

As a schoolboy he went to Marlborough, and stayed there till within a year of his going to Oxford. The discipline there seems to have been unusually lax, boys being left very much to themselves. Morris, however, made the fullest possible use of the excellent school library. A friend of mine who was there with him says he was a terrible storyteller (using the word in its literal sense). At Oxford he matriculated at Exeter College in 1852, and had the privilege of knowing it (Oxford) before the rebuilding mania set in. Of Oxford Morris said more than once: "It is a grievous thing to have to say, but say it I must, that the one most beautiful city in England, the city of Oxford, has been ravaged for many years past, not only by ignorant tradesmen, but by the university and college authorities." And in 1883, when lecturing in Oxford, he said: "When I remember the contrast between the Oxford of to-day and the Oxford which I first saw thirty years ago, I wonder I can face the misery of visiting it."

It is always said a man is known by his friends. Morris's chief friend at Oxford was Edward Burne-Jones, the Ned or Ned Jones of his letters of the time. Also there was Canon Dixon, Price, and Falkner. Of the two friends, Burne-Jones left Oxford without a degree; William Morris took his B.A. in 1856.

By 1855 Morris and Burne-Jones had surrounded themselves with a few kindred spirits, who assumed the title of a Brotherhood, and they at one time thought of all living together. On his coming of age, 1855, Morris found himself possessed of an income of nearly £1,000 a year—a fact which might have been disastrous for anyone who was not a William Morris.

His private means enabled him to finance the "Oxford and Cambridge Magazine," as the organ of the Brotherhood, and also to strike out for himself a career which to anyone who had to consider ways and means to the fraction of a penny would have been at that time practically impossible. People looked sideways at artists then. It was at Oxford that Morris found out that he was a poet.

He had gone up to Oxford with the intention of taking Holy Orders. So had Burne-Jones. But by 1856 he had abandoned the idea (so had Burne-Jones), and was articled as an architect to Street (whose office was then in Oxford), where he made friends with Philip Webb.

Moving to London when Street moved there, he set up a joint studio in Red Lion Square with Burne-Jones, both of them being then much under the influence of Rossetti.

Though he had worked hard for a time with the idea of being a painter, he had worked still harder at his poetry, and his "Defence of Guinevere" was published in 1858.

Much may be put down to Rossetti's influence—*e.g.* the treatment of the legend of King Arthur. Much, too, to the influence of Browning.

Becoming engaged in 1857 to an Oxford lady, Miss Jane Burden, it was necessary for Morris to find a house fit to live in. Failing in his quest, the only possible thing to do was to build one; and Philip Webb and Morris planned and built "The Red House," Upton, near Bexley Heath.

This house has been called "that wonderful red building which proved to be the prototype of all the beautiful houses of the so-called Queen Anne revival." But it really was Gothic, as Morris was himself, with traces of French influence.

It was the beginning of a new era in house-building. It was a living protest against the ugly square-box style of house with a slate lid.

The difficulty experienced in getting furniture, glass, earthenware, china, and other things for domestic use led, in 1861, to the founding of the firm of Morris, Marshall, Falkner & Co. Later on it came to be Morris & Co. As a matter of fact, it was Morris, and always was so.

The firm exhibited at the International Exhibition in 1862, and obtained a medal for decorative furniture and tapestries, and another for stained-glass windows.

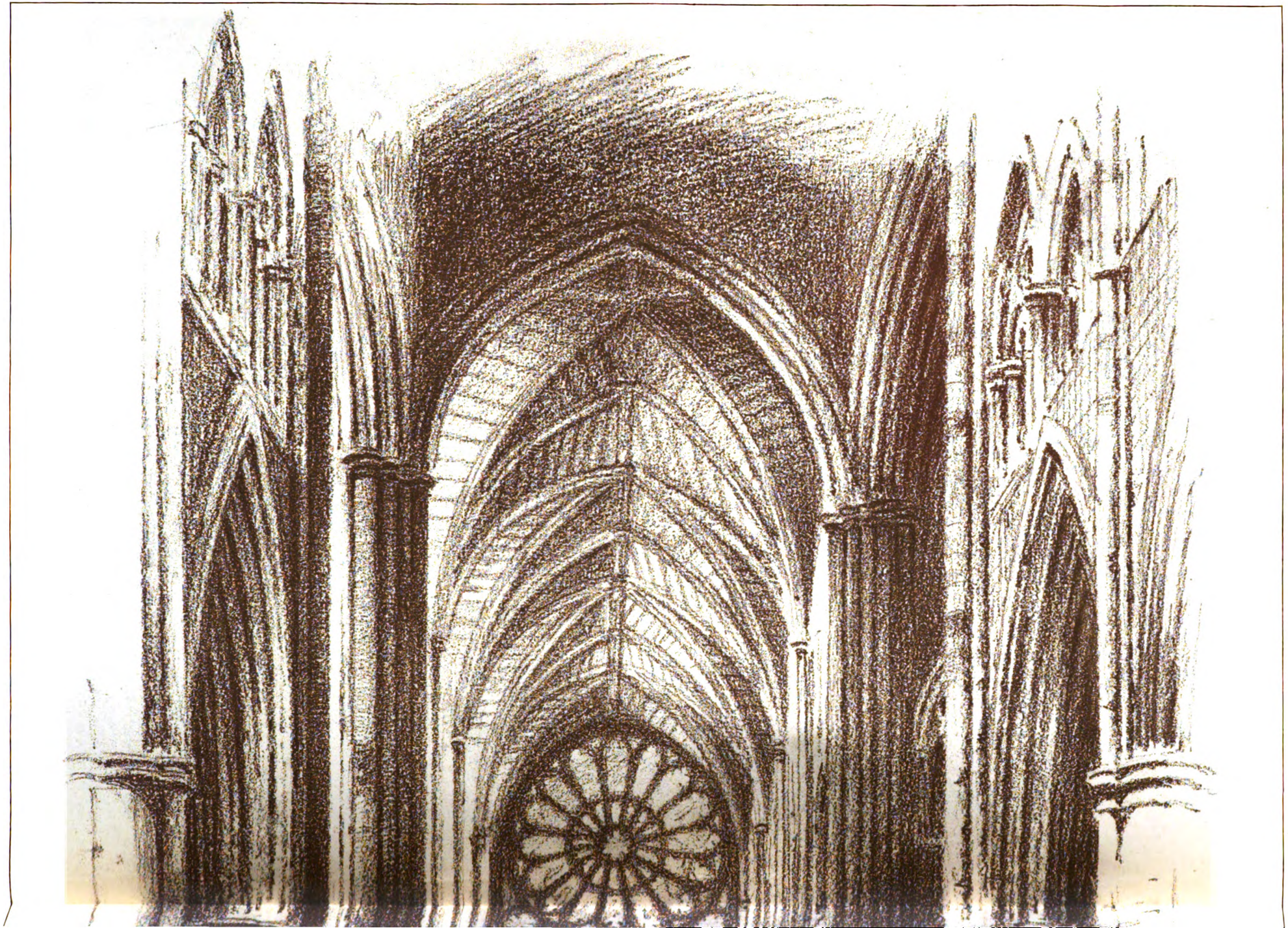
In this year Morris gave up all idea of being a painter of easel pictures, and finally turned his attention to the handicrafts and their revival.

As business increased quickly he found the travelling up to town wasted his time too much, and in 1865 he came back to town.

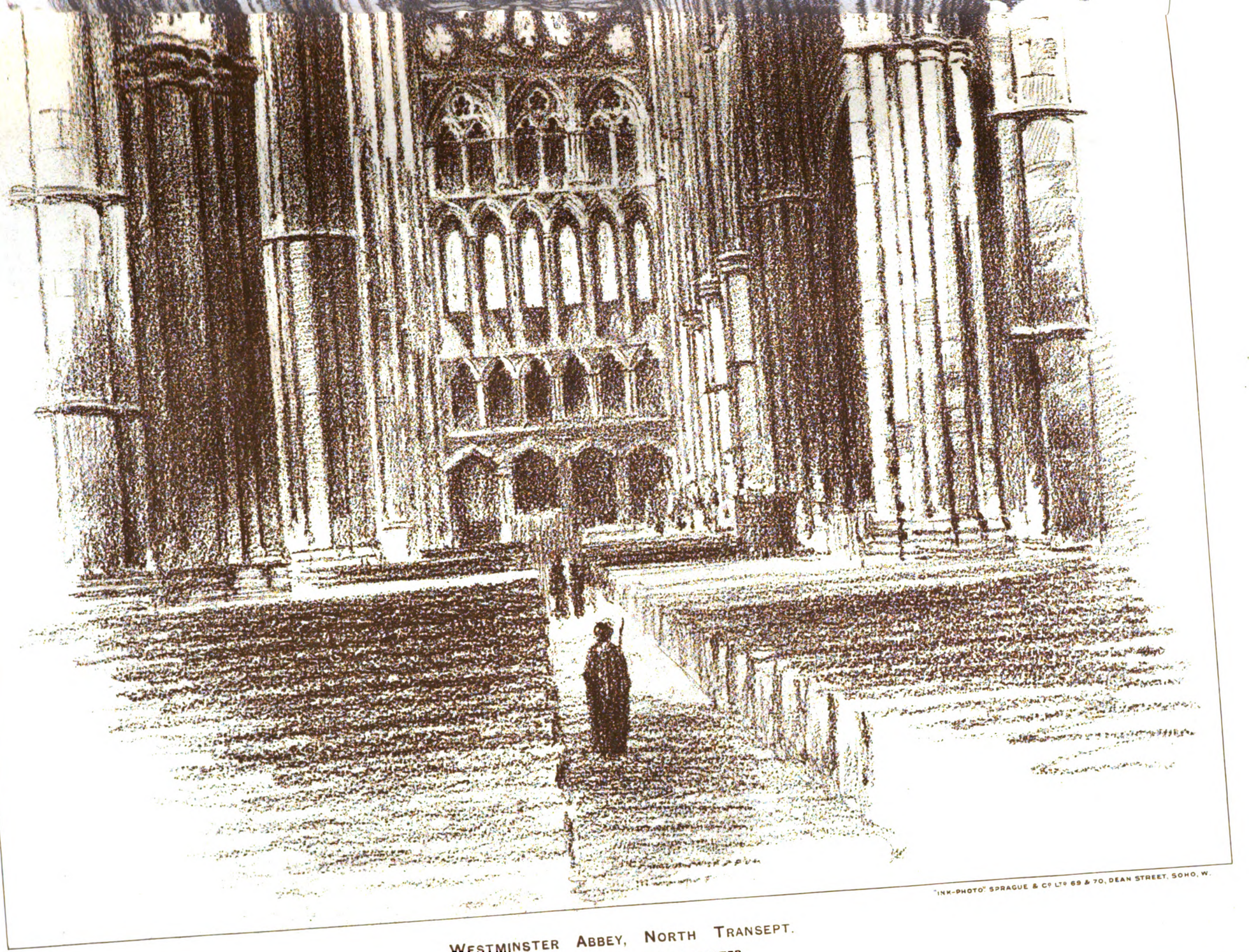
In Morris's endeavour to revive the crafts, no process

* Abstracts from a lecture read last week at Carpenters' Hall.

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WESTMINSTER ABBEY, NORTH TRANSEPT.

From a drawing by Mr. CHAS. S. CARTER,

"The Architect" Travelling Student, 1914.

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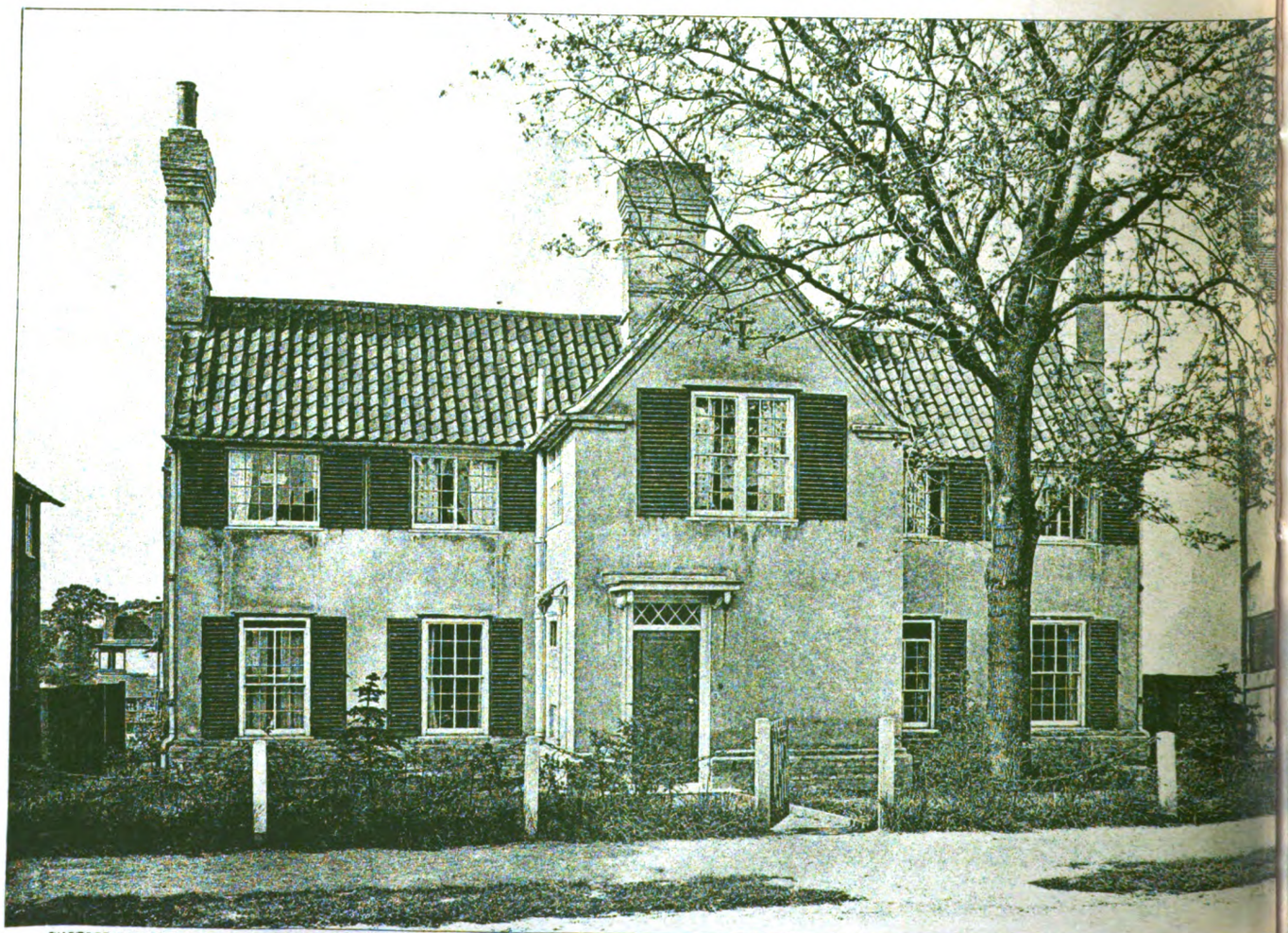
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GIDEA PARK ESTATE. "DIE LORELEI."

Messrs. K. D. YOUNG & H. HALL, Architects.

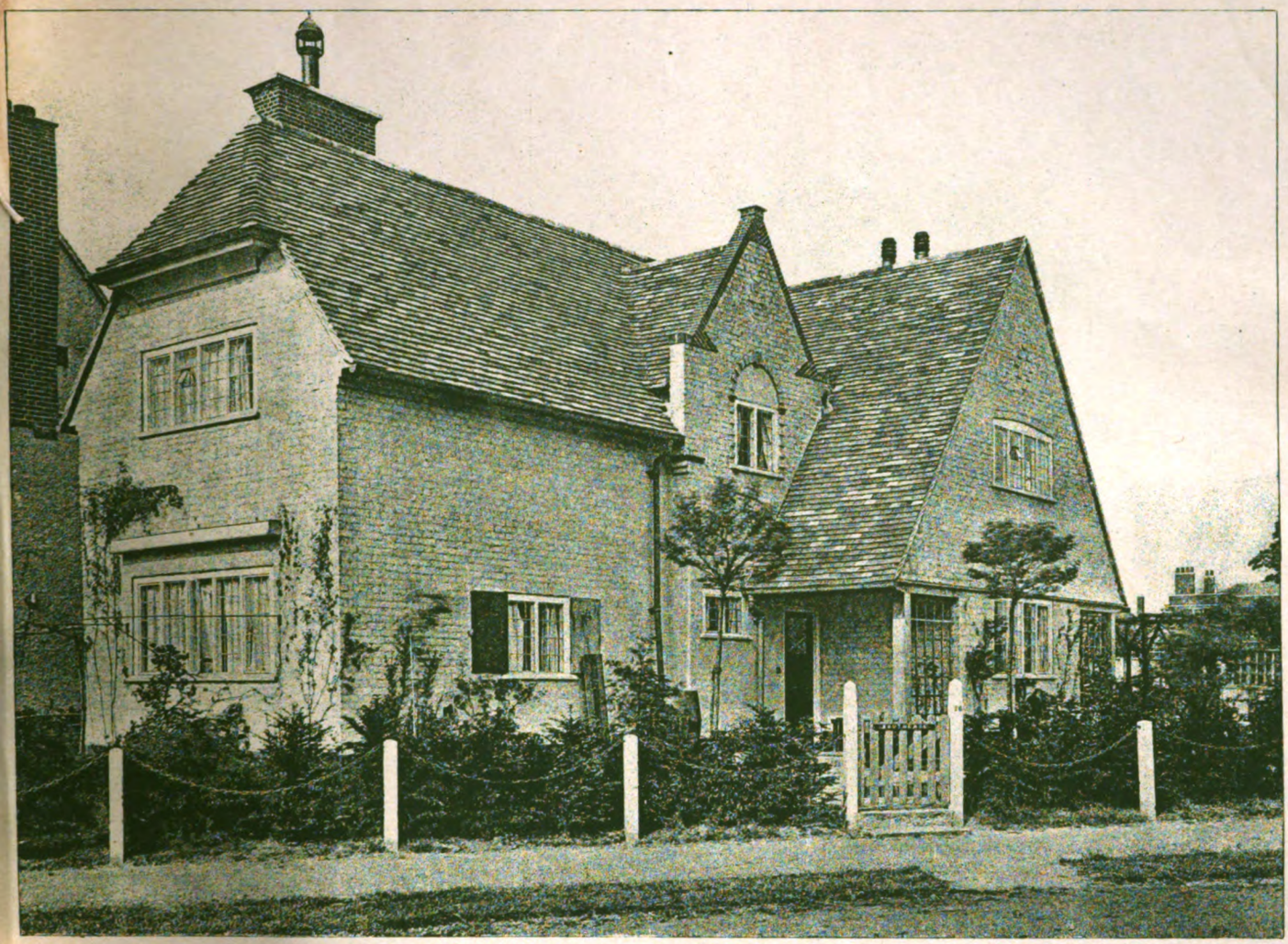


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GIDEA PARK ESTATE, "CLAREMONT."

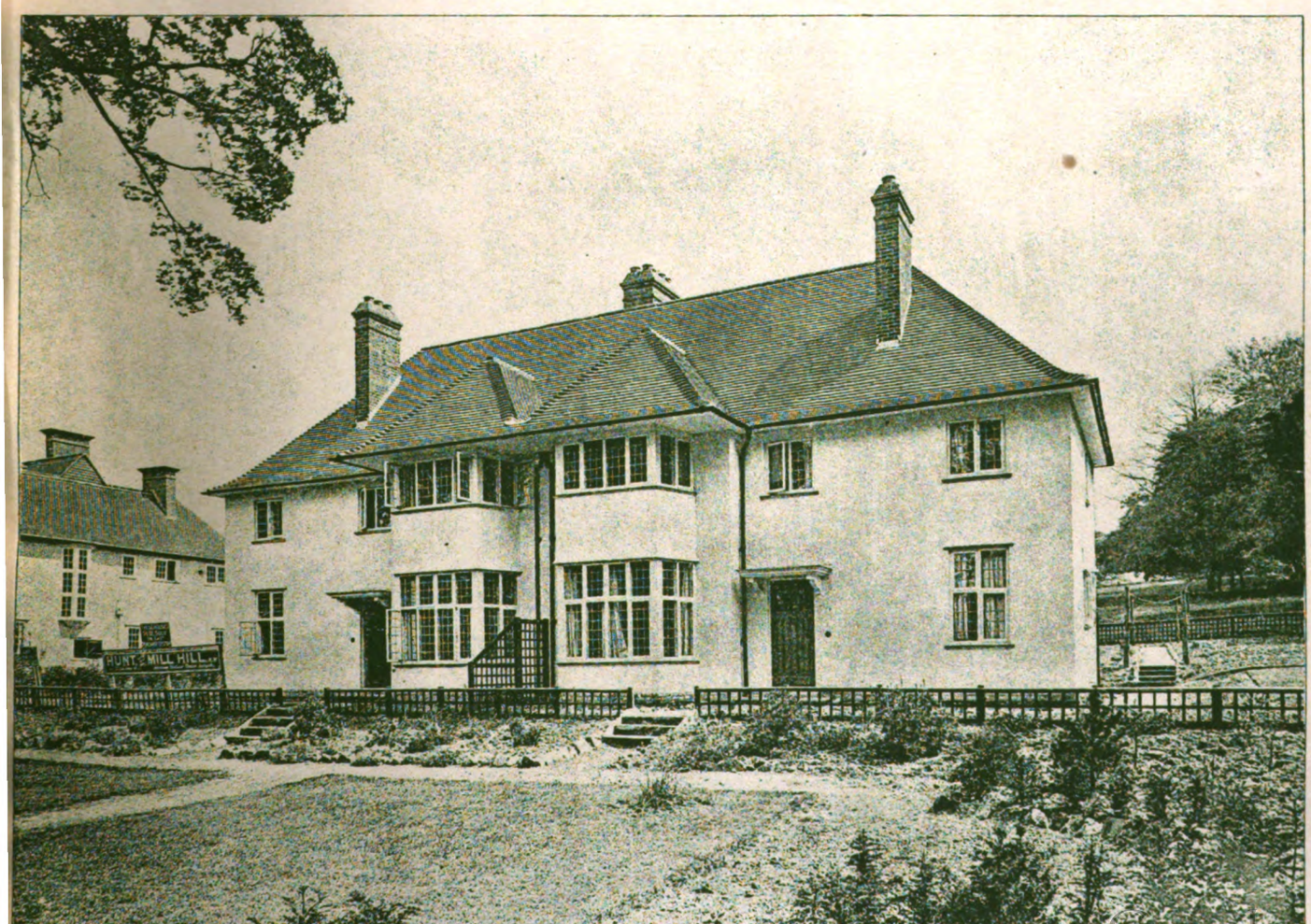
Mr. A. RANDELL WELLS, Architect.

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GIDEA PARK ESTATE, "SOUTHEASE."

MR. T. MILLWOOD WILSON, Licentiate, R.I.B.A. Architect.



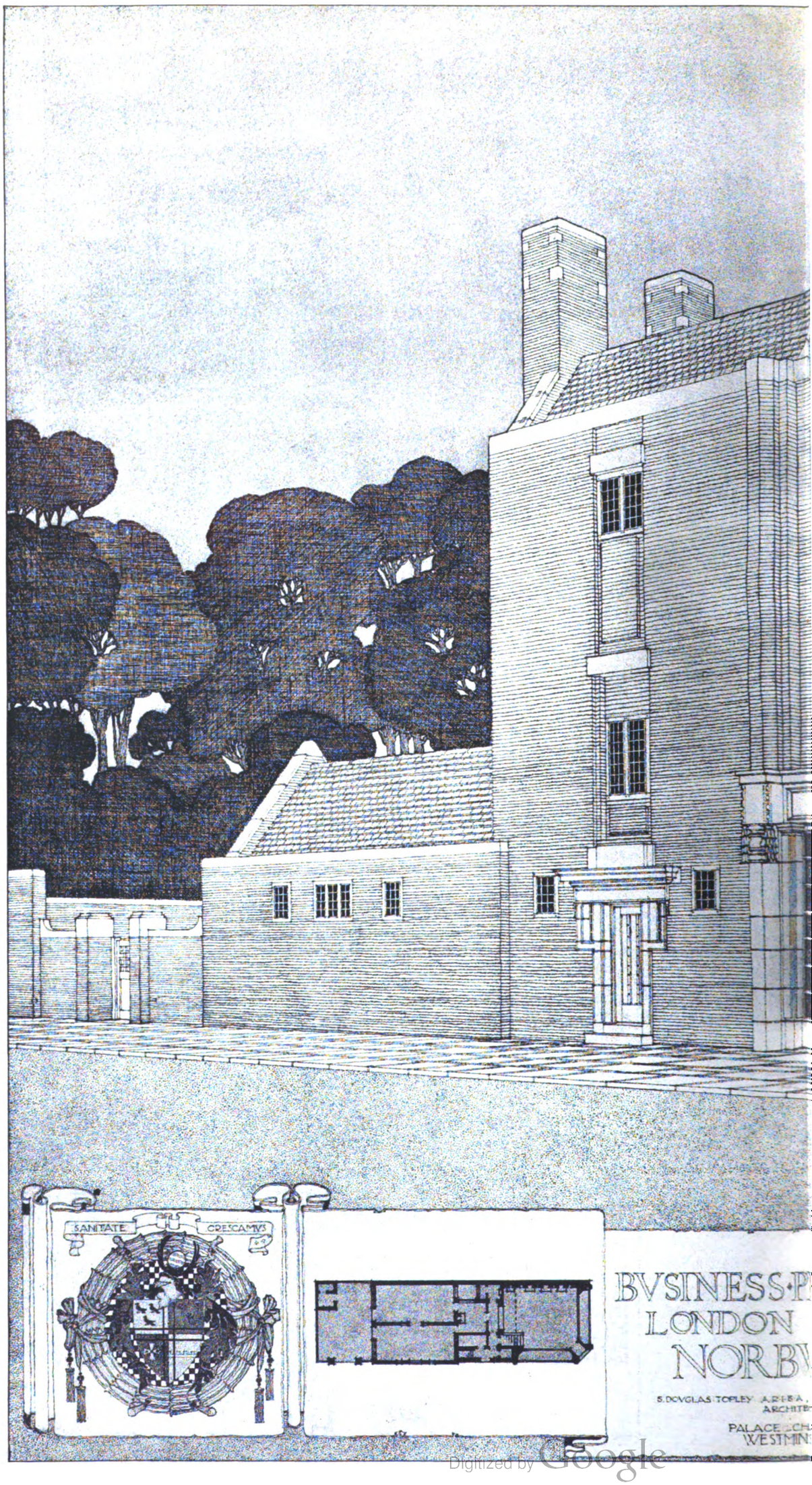
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MILL HILL, 14 & 15 WINTERSTOKE GARDENS.

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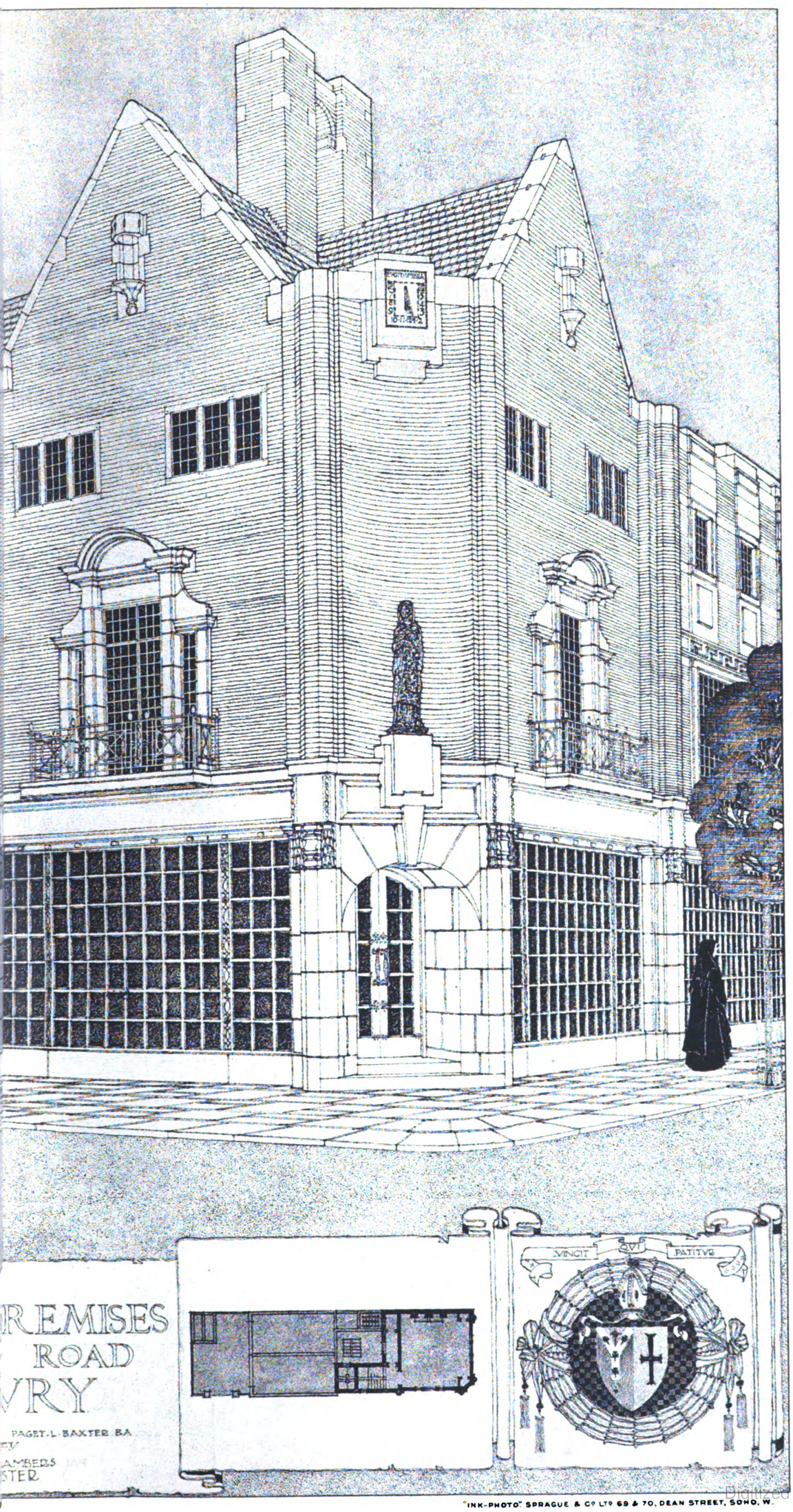
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or method was left untried, and the general unsatisfactory state of the various crafts forced Morris to spend much time in making the raw materials he wanted for his own artistic use.

In 1866 Morris was given the chance of showing his powers as a decorator at the South Kensington Museum, now the Victoria and Albert Museum, where he did the small dining-room. It is known as the Green Dining Room.

It was a costly room to decorate (some thousands), and the authorities hesitated to clinch the bargain, but eventually it was settled, and it proved the cheapest in the end, for it is there to this day, and the walls have never had to be touched.

In 1871 he sought diligently for a house in the country, and finally took up his abode at the Manor House, Kelmscott, near Lechlade, Oxfordshire. It is a charming house, of two dates, beautifully situated on the Upper Thames, a few miles from Lechlade, Fairford, and Burford.

The name Kelmscott gave its name later to the London House on Hammersmith Mall that Morris took in 1878. From Kelmscott House, too, came the most famous of his many achievements, the Kelmscott Press—a press which, in its short lifetime, turned out books of a style and beauty beyond which a painter may not reasonably hope to go, and to which, if they work early and late, they may hardly as a rule hope to attain.

In 1881 Morris, as the work grew, looked about for additional workshops, and finally took Merton Abbey. It was then rather inaccessible, beyond Wimbledon, but was just what Morris wanted for his dyeing, his looms, and his other industries.

I saw it recently, and it is just the same as it was in Morris's time. Some of the "boys" of that time are the "men" of to-day. The neighbourhood has changed, being all built over, with trams passing the door.

The works at Merton were and are a revelation to anyone who knows the noisy din of a modern factory. They are rather a set of studios where the artists (for his workers were all that) worked at a leisurely pace, and used primitive methods in their dyeing, their printing of cotton fabrics, and their weaving, whether of priceless tapestries or of humbler carpets.

There was no steam engine. but a more poetic water wheel, and that was the keynote to the work of the place. Everything went on smoothly and sweetly. To go inside the place was like stepping back a century on the tide of time.

In 1890-91 Morris turned his attention to printed books, and in this branch of art perhaps made his high-water mark.

At the Arts and Crafts Exhibition of 1896 the printing by Morris—*i.e.*, the Kelmscott Press—was the most beautiful in the whole exhibition. That same year Morris died—just a couple of days after the exhibition had opened. The *Life of Morris*, by MacKail, is the most beautiful biography ever written in English, and in real English too, not the halfpenny newspaper jargon of journalism, but the language as it should be written and spoken.

Mr. Massé divided William Morris's life into four periods so far as it concerned the arts and crafts. First came decoration (*i.e.*, glass painting, designing, tile painting, furniture, and wall papers) from 1861 to 1874. Then came dyeing in 1875-6, then textiles (cretonnes, chintzes, carpets and tapestry) in 1877, and lastly, in 1890, printing, book decoration, and the Kelmscott Press. The periods were by no means exclusive of one another, and all this time the poetical life was going on side by side with the other occupations. His literary output may be imagined from the fact that it requires an edition of twenty-five large volumes to contain his work.

We are told that no man can serve two masters. Morris tried to serve the cause of Socialism and the cause of Art. With his strong sense of duty to his fellows he clave to the one, and in proportion as he gave up to it much of his time, both day and night, his energy and his money, so his devotion to the other—*i.e.*, his art—suffered, as it was inevitably certain to suffer. He honestly believed both to be bound up the one in the other. Had he not thought so he could hardly have done so much as he did for both.

What was it that inspired Morris all through his life as a craftsman? The answer to this is, "His passionate love of beauty," and the resulting hatred for the ugliness that was to be seen in everything around him. He did not go for beauty for his own enjoyment alone and at the expense of others. He thought, felt and acted upon the principle—his principle—that art was not for the privileged few—the so-called upper classes—but that art was to be made by the people and for the people as a happiness to the maker and to the user. He was never tired of saying that "Art was meant to raise man's life above the daily tangle of small things that weary him," and his theory was that the first step towards art worth having was to make the life of the worker worth living. He once said, "Let me say it, that either I have erred in the aim of my whole life, or that the welfare of these lesser arts involves the question of the content and self-respect of all craftsmen." He believed firmly that if only life were easier and men had time to look about them, they would learn to love art.

It must not be supposed that Morris with his own hand made all the things produced by Morris & Co. But nothing was done by them which he himself could not do, and which he had not learned to do so as to be able to teach others if and when required. This was one secret of his enormous power over men.

Two of his short pithy sayings are to be noted—"Delight in skill lies at the root of all art"; the other, "All real art is ornamental."

Morris admitted the necessity for frankly accepting machinery for the printing of wall-papers, and warned against trying to make the paper look as though painted by hand. He felt the need for beautiful patterns, and said that the designer, if impressed by some beautiful piece of nature, expresses his pleasure to others and gives them some of his own keen delight. "Without this," he declared, "a paper design will not be worth much; it will be but a makeshift expedient for covering a wall with something or other; and if we really care about art we shall not put up with something or other, but shall choose honest whitewash instead, on which sun and shadow play so pleasantly, if only our room be well planned and well shaped and look kindly on us." His excellent advice was, "Whatever you have in your rooms think first of the walls, for they are that which makes your house and your home; and if you don't make some sacrifice in their favour, you will find your chambers have a kind of makeshift, lodging-house look about them, however rich and handsome your movables may be." "Simplicity is the one thing needful in furnishing, of that I am certain." To this he added, "If our houses were only built as they should be, we should want such a little furniture and be so happy in that scantiness. Even as it is we should take as our maxim the less the better. Excess of furniture destroys the repose of a lazy man and is in the way of an industrious one; and if we really care for art, we shall always feel inclined to save on the superfluities that we may have wherewithal to spend on works of art." The golden rule which he thought would fit everybody's case was, "Have nothing in your houses that you do not know to be useful or believe to be beautiful."

Morris, in building "The Red House," inaugurated a new era in house building, planning and furnishing. That of itself led to a new era of decoration and a new birth for the minor arts. Wall papers have ceased in many cases to be ugly and inane, and have often become beautiful. Cretonnes and chintzes have become things of beauty. Woollen and other tapestries for hangings and silk brocades have been introduced with delightful patterns designed by men who can draw. Table glass has become a sight to gladden the eyes; furniture has become far simpler, more solid and genuine, practical and useful, and for that reason more beautiful. Carpets, too, have, in the main, become reasonable.

Of Morris's influence abroad it is enough to say that it has been stronger in Germany than in France. France remains true to French styles. Germany was glad to return to Morris and common-sense, after indulging in a bout of L'art Nouveau—the art of the undying worm as it has been called.

With all his love for architecture and his knowledge of it, Morris never directly built another house after the "Red House." He helped to make the creations of others beautiful, but he was satisfied for himself to get away to his beloved Kelmscott when he could. His love for it may be seen in his grief at the fears he had at one time that he might have to cease being its tenant.

Of his decoration of houses there is not time to say much. Of his own house, "The Red House," we read in the Life that the plastered walls and ceilings were treated in simple designs in tempera; for the hall and main living rooms a richer and more elaborate scheme of decoration was designed

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and gradually executed. The drawing-room he said he meant to make the most beautiful room in England. In his own bedroom the wall was covered with hangings.

Morris was never afraid of pattern, yet out of his elaboration he could, where others would fail, get repose. This was due to his colour sense and his command of it. As he used to say, "The result of decoration must be colour, not colours." He considered that anyone who preferred bare walls must be in an unhealthy state of mind and probably of body also.

Lewis F. Day has stated that Morris felt his least satisfactory work was in the direction of stained glass, as he was so dependent upon others. At first Madox Brown used to draw the cartoons, and then later Sir E. Burne-Jones; but the colour was always Morris, and no one else. The firm still goes on producing, as always, very fine glass indeed, secular and ecclesiastical.

Of his printing, which was superlatively beautiful, the influence to-day is, perhaps, the strongest and steadiest. He gave the final fillip to the earlier strivings for better printing. The point he made in printing was that the thing to go for in a book was not the title page or any one page, but the effect produced by the opening of two pages in the book. He also insisted on good paper; no wood pulp and superfine art surfaces for him. And he insisted on good black ink.

Morris was absolutely thorough in everything; but he was thorough in one thing at a time to the exclusion of all else. Hence we have his life divided into periods. He set up an ideal and one of absolute perfection, and to that end he worked with all the intensity of his nature—with the ideal once attained he was ready for some other field of energy. In this way he preserved his buoyancy and his spontaneity even when doing the work of ten ordinary men.

He was naturally simple—that is, fond of simplicity in living and all else. That is why he was in reality a Gothic personality and of the thirteenth century in his heart. He considered it our duty "to abstain from multiplying our material wants unnecessarily . . . and to see that the articles we do use are the works of free men and not of slaves." He hated compromise and makeshift of any kind; he was so genuinely straight himself. He was characteristically impatient, and that is why his language sometimes effervesced with expressions that would not look well in print.

He was an excellent man of business, though he thought the ordinary ways of trade low and mean in the extreme. He was not grasping, and would have been content to see but a small return on his fabrics and his books.

He said that the greatest pleasure in life was the pleasure of creating beautiful things. In this respect, as Lewis F. Day wrote of him, "He may be counted a very happy man."

You could not see him on the platform without being impressed. He was short, stocky, powerfully built, and stalwart, sturdy and strong. There was no swagger or side, but there was the look of a man who felt he was right. He was fresh in complexion, with an unkempt beard; and his hair, very dark in youth and luxuriant, standing like a mane from his massive forehead, gave him the look of a lion. His eyes were grey, with a far off dreamy look, but quite able to laugh with merriment, to kindle like fire with enthusiasm, or to flash with indignation. He was not an orator, but his words were incisive and always to the point, and his voice deepened as he spoke.

As Lewis F. Day wrote of him, "To see him was to know him for a rebel born. He was inclined, at times at all events, to divide men into two classes, flunkies and rebels; and he was not content to be a rebel himself, but professed his desire to stir up rebellion in others against what to him was intolerable. The law? What law? Who made it law? Conformity to him was slavery. He would follow no custom. Usage? That was a reason for not doing likewise. His behaviour was individualistic absolutely; he dressed, spoke, did as pleased himself, and had nothing but contempt for orthodoxy of whatever kind. And with all this he was a Socialist, and a militant one, convinced that he saw in Socialism a way out of the degradation into which Society (and modern art and workmanship accordingly) had fallen. He never seemed to suspect that Socialism (as understood by his political brethren) would leave less room than ever for the free action of a man—of a man, that is to say, as distinguished from a sheep."

Morris always said he was a Goth. He had gone up to Oxford with no definite ideas as to art, except that he hated the Great Fair of 1851—his expression for the Great Exhibition of that year. His feeling was for mediæval times, and the so-called Gothic revival of Pugin and others fitted in very well with his sympathy for the earlier centuries of our history.

Morris once said that if he were unable to work he would die of weariness and despair. If he had his choice he would have died as he did (ten years before his time) in full harness rather than live on powerless either in mind or body and helpless to work.

BY-LAWS AND THE HOUSING QUESTION.*

By W. H. A. COURT, Assoc.M.Inst.C.E., Borough Engineer's Department, Leicester.

THE question of the housing of the working classes is one which has attained some importance in the last few years, and, in view of current events, seems destined to hold a prominent place amongst the problems of the day.

Into a number of the reasons advanced for the cessation of private enterprise in the provision of dwellings for the working classes the author does not propose to enter, for obvious reasons. One must be mentioned, however. This is the difficulty which appears to be experienced by speculative builders (the word "speculative" is used here in a good sense) in erecting cottages at a low rent to give sufficient return for their outlay. This difficulty is partly attributed, by builders and architects alike, to unnecessary stringency in the model by-laws and the local by-laws, which are, of course, based upon them, with, in most cases, considerable amplification.

With regard to the criticisms of the by-laws raised by architects of eminence and great repute, one point has always appeared to the author to stand out. This point is that they appear to overlook the fact that the by-laws have been framed with the object of endeavouring to meet all cases, and not for the ideal conditions with which these architects, because of their eminence, have to deal. The author hopes to demonstrate his meaning more clearly in dealing with a few actual instances which have been cited in these charges against the working of the model by-laws in particular, and possibly one or two in force in the particular district in which the author is engaged.

To get at a reason for the excessive cost of cottage building, and the extent of the culpability of the by-laws in this direction, the author proposes to consider the cost under three heads, viz.:—

(1) The cost of the site;

(2) The cost of the building proper; and

(3) The cost of making the roads in which the building is situated.

With regard to the first—namely, the cost of the site—this may be dismissed at once, as the by-laws will have no influence on the matter.

The cost of the building itself has now to be considered.

In a paper read before the Royal Sanitary Institute by Mr. H. D. Searles-Wood, F.R.I.B.A., and published in the Journal of the Institute in October 1913, "The Architect's Grievance against the Model By-laws" is rather fully set out. The author of that paper quoted from a number of other papers read before other societies, with the same object in view. The deposit of drawings, &c., for the approval of the local authority is one of the points mentioned, and the interpretation put upon the by-laws by the officials in their inspection of these plans. In this connection the issue is somewhat obscured by the claim that all artistic effect is suppressed, or, at any rate, that the tendency is in that direction. To remedy the repressing effects of the over-zealous building inspector, a Court of Appeal is proposed, by which it is hoped to obtain precedents for future cases to be fought out, and to render "elastic" the present cast-iron regulations. The difficulty of carrying out by-laws as they stand is already a sufficiently onerous task. If they were to be increased in the way suggested, it appears to the author to render the office of the surveyor and building inspector untenable. The cost of the building would not, at any rate, be reduced.

One great stumbling block appears to be the minimum height of rooms. This was not contained in the original by-laws, and was added in 1891.

It has been proposed to reduce the height of rooms to 7 feet 6 inches. This appears to be the lowest limit generally reached. Such a reduction would certainly save, on the ground floor, 1 foot of brickwork, and on the first floor a

* Read before a meeting of the Institution of Municipal and County Engineers.

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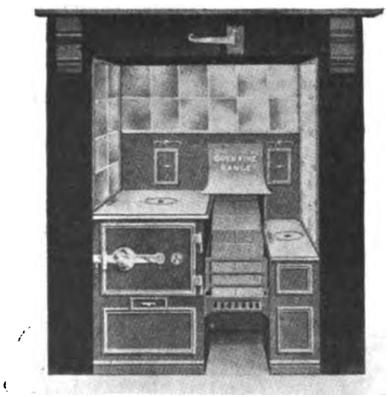
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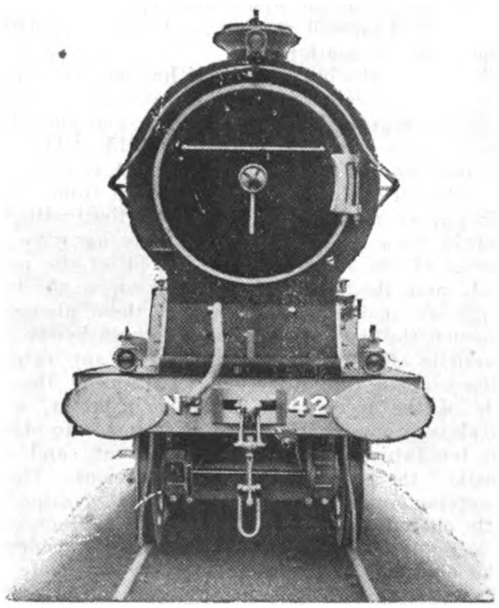
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similar amount. This would be, without doubt, a considerable saving in the cost of construction. But surely it would not be wise at this time to suggest that the cost of a building should be reduced at the expense of the health of its inhabitants? This point was raised at the meeting of the East Midland District held at Newark in February 1912. The case of a farm labourer's cottage was mentioned, in which the living room was about 6 feet 6 inches, and held the man and all his family. After a wet day in the open, a big fire in the evening with all the members of the family present, and the windows closed, the state of the air in the upper part of the room, at about the breathing level, can be more elegantly left to the imagination than to description.

The usual reply to this is that the workers must be educated to the beneficial results of fresh air and ventilation. It would appear to be safer to educate them to this idea in comparatively lofty rooms rather than to provide the lower level to the ceiling and to educate them afterwards.

The same arguments apply to bedrooms, but with added force. Space would undoubtedly be saved (and, with it, cost) were rooms in the roof not subjected to these restrictions. But here dormer windows are unavoidable, and consequently light must be, to a greater or less extent, kept out of such rooms, and with the light the beneficial effects of direct sunlight, well known to have great germ-destroying powers. Ventilation of such rooms would also be much more difficult. Further, the low portions of the rooms round the walls, being more difficult of access, could not be so easily kept clean. This may not be of such importance in the large houses in suburban districts (which are the houses probably in the minds of the architects in question), but in houses of the class under discussion the author's own idea is that they should be so designed as to give every opportunity for being cleansed in the easiest possible manner, and that plenty of light should be accessible to every part of the room.

Reference may also be made at this point to the height of windows, though this will have small effect on the cost of the building. In the Leicester local by-laws it is required that at least one window in each room shall extend to a height of not less than 7 feet 6 inches above the floor, and that the upper half, at least, shall be made to open. This seems a very reasonable requirement, and ensures that rooms can be ventilated above the heads of the occupants, whereas, were the windows lower, at, say, 6 feet from the floor, the incoming air would create a draught at the level of the head.

It must also be noted that these by-laws are for the regulation of the builders, to ensure that they provide the means of thorough ventilation. It would be useless to educate the inhabitants in the advantages of fresh air and cleanliness were they compelled, owing to scarcity of houses, to live in dwellings where they would be unable to enjoy these advantages.

Another means which has been proposed for effecting the ventilation of rooms is by constructing a flue, with branches for each room, by the side of the chimney flue, and carried up above the roof with it. This would undoubtedly be extremely useful for the purpose, and the ventilation of the apartments would not be so dependent upon the opening of the windows by the occupants. On the other hand, the extra cost would take up the saving effected by reducing the height of the rooms. Consequently the gain appears to be nil.

To the author's mind the direction in which economies may be looked for in the future will be found in careful planning (leaving the artistic elevations to follow the plan), and in the use of cheaper materials of construction in the minimum quantities.

Provision is made for this in the new model by-laws (Series IV., draft form), by which (Section 25, Sub-section b) concrete, plain or reinforced, may be used "of such thickness as shall be necessary to secure due stability."

The third item in the summary of expense—namely, the street-making—must now be considered. Possibly it is in this item that the greatest initial saving may be effected. It is also in this direction that the greatest variation in the requirements of different districts may be found. It is, therefore, only proposed here to deal with the by-laws of the borough of Leicester. Here there are two standard types of streets—namely, the 40-foot roadway paved with granite setts, and the 50-foot roadway with water-bound or tar-macadam carriageways. In each type the footpaths are laid with concrete slabs. These roads, and especially the first-mentioned and much more numerous kind, are certainly expensive to construct. It has been claimed that "over two-thirds of the cost of cottage building sites is" taken up by "these superior streets." There is another side to this, however, and that is the low cost of maintenance, repair, and cleansing. Were a large number of streets of less endurable description to be thrown upon the hands of the Corporation to maintain and repair, a very large increase in the annual cost of highway repair would ensue. This would result in an increase in the local rates, and would naturally tend to produce that overcrowding which it is the object, by providing increased accommodation, to prevent.

A number of extremely clever and ingenious proposals have been made to cheapen these streets, and one should be mentioned in particular. Starting from the proposition that repair is necessary in order to replace wear, the next step, evidently, was to find means to prevent wear. This was accomplished by having only a limited number of "through" streets, the remainder only being accessible to wheeled vehicles for half the length from each end, a set of post or a small clump of trees being placed in the middle of the length to stop through traffic. This would undoubtedly be efficacious in preventing excessive wear, and would allow of less enduring construction. The author is not so sure of the moral effect on a carter with, say, a big load of coal, who might arrive into one of these "blind" streets by mistake. There probably would be further difficulties in the case of fire.

The author is of opinion that this paper will be considered to consist chiefly of destructive criticism. Any discussion will, he hopes, bring forward something constructive, however.

In conclusion, he apologises for the scattered nature of these few notes, which has been due to want of time owing to pressure of business.

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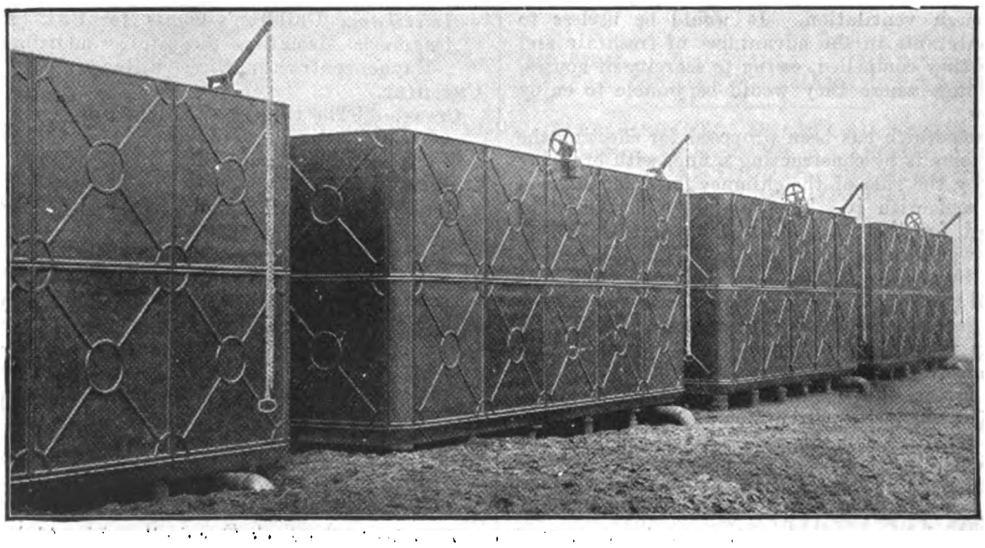
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ENGLAND—*continued.*

KENT.

Barming Heath.—County Lunatic Asylum: Assistant M.O.'s house.

Dover.—Royal Victoria Hospital: nurses' quarters (£3,000).

Hythe.—Isolation hospital, Scene Wood.

Mersham.—Smallpox hospital, for East Ashford R.D.C. Mr. T. H. Wilde, architect, 30 Albemarle Road, Willesborough.

LANCASHIRE.

Blackpool.—Hotel, Bloomfield Road, for Messrs. Catterall & Swarbrick.
Two houses, Beechfield Avenue, for Mr. E. J. Palmer.
Two houses, Condor Grove, for Mr. R. Grimbledeston.
Two houses, Hazel Grove, for Mr. A. G. Parker.
Two houses, Ferguson Road, for Messrs. J. & W. Dugdale.
Two houses, New Road East, for Mr. J. Mason.
Ice works, Harewood Street, for the Blackpool Ice and Cold Storage Company.
Shops, &c., Station Road, for Mr. J. J. G. Hall.

Bolton.—Electricity Generating Station, Spa Road: alterations. Messrs. B. Talbot & Sons, contractors.
"The William the Fourth" P.H., Manchester Road: rebuilding.

Upholland.—Eight workmen's dwellings.

LEICESTERSHIRE.

Loughborough.—Proposed fire station and depôt.

Shepshed Green.—Proposed workmen's dwellings.

LINCOLNSHIRE.

Ashby.—Council Schools: additions. Messrs. Scorer & Gamble, AA.R.I.B.A., architects, Bank Street Chambers, Lincoln.

Market Deeping.—"The Horse Shoe" Inn: rebuilding. for Messrs. Soames & Co.

MIDDLESEX.

Ashford.—Public Swimming Baths: additions and alterations. Mr. H. D. Pearson, F.R.I.B.A., architect, 76 Newman Street, London, W.

Ealing.—Council school, St. Mary's Allotments. Mr. W. R. Hicks, Borough surveyor.

Finchley.—Hospital (£30,000).

Wealdstone.—Six cottages, off Kenton Road, for Mr. A. Burnham.

NORTHUMBERLAND.

Newcastle-upon-Tyne.—Junior day technical school for 240 places.
Girls' secondary school, Heaton.

NOTTINGHAMSHIRE.

Beeston.—"The Star" Inn: reconstruction.

SOMERSET.

Basonbridge.—Council houses. Mr. Gullidge, contractor (£693).

Taunton.—Public baths (£8,000).

STAFFORDSHIRE.

Gnosall.—Council school (£2,250).

Lichfield.—Smallpox hospital: additions.

Wednesbury.—Twenty-four artisans' dwellings.

WARWICKSHIRE.

Bedworth.—House, King Street: additions and alterations, for Mr. King.

Coventry.—Licensed premises, corner of Humber Road and Humber Avenue, for Mr. J. N. Laws. Mr. W. H. Hattrell, architect, 23 Hertford Street; also
Licensed premises, corner of Terry and Orwell Roads, for Mr. W. E. Showell (of Erdington).

WORCESTERSHIRE.

Bournville.—Proposed church.

Broadway.—Capital and Counties Bank, High Street. Messrs. Espley & Co., Ltd., contractors, 77 High Street, Evesham; also
Lifford Memorial Hall.

Droitwich.—"The Imperial" Hotel, Corbett Avenue, for Mr. F. J. Evered.

Great Malvern.—Council school.

YORKSHIRE.

Carcroft.—Wesleyan Church and schools. Mr. O. M. Thorp, architect, 133 College Street, Long Eaton.

Great Driffield.—Isolation hospital (£13,300).

Leeds.—Pumping Station (£1,600).

Northallerton.—Cottage homes, for B.G.

Sheffield.—Baths, Low Wincobank.
Baths: central laundry.
Washhouses, Upperthorpe.

South Elmsall.—Twenty working-class dwellings.

WALES.

Cockett.—Infants' Council school.

Garnswllt.—Council school: additions.

Rhosddu.—Council school: proposed re-modelling. County architect.

Swansea.—School clinic, Morriston.

SCOTLAND.

Annan.—Combination Infectious Diseases Hospital: additional ward block (£1,300).

Cambuslang.—Superintendent's house, &c., in the public park (£1,350).

Coatbridge.—Institute (£3,500), Bank Street, for the United Y.M.C.A.

Dumbarton.—Post Office: extension.

Glasgow.—Fifteen self-contained lodgings, Lochlee Road, Newlands. Mr. J. Baxter, builder, Woodhead Avenue, Kirkintilloch.
Tenement of dwellings, College Street, for the Corporation.
Works, Dobbie's Loan: additions, for Messrs. Williamson, Morton & Co.
Works, Old Edinburgh Road: extensions, for Messrs. W. Beardmore & Co., Ltd.
Works, Caxton Street, Anniesland: additions, for Messrs. Barr & Stroud, Ltd.
Works, Kyle Street: additions, for Messrs. Barr & Co., Ltd.

IRELAND.

Celbridge.—Labourers' single cottages, for R.D.C.

Claremorris.—Twenty-one labourers' cottages, for R.D.C. Mr. M. Cosgrove, Council architect.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Building Exhibition, Olympia.

SIR,—I notice in your issue of February 5 you state that there would be a difficulty in renting Olympia this spring.

I should like to point out that this is not the reason why the contemplated Building Exhibition was abandoned. We had actually engaged the hall for the dates as advertised, and the War Office had agreed to relinquish their tenancy for the time being.

The only reason for postponement was the present condition of affairs, which does not justify the holding of exhibitions of this nature.—I am, yours faithfully,

H. GREVILLE MONTGOMERY.

43 Essex Street, Strand, London, W.C.

Belgian Ruins.

SIR,—One of your daily illustrated contemporaries (already trounced in my article of your issue of January 22) is at its old tricks of mystification again. On February 11 it gave a picture of a hole made by a shell in the road close to "a cathedral in Belgium." As there were views of Soissons, Arras, Albert, and other ruins on the same double page, what was the object of the exasperating and silly withholding of the name of the cathedral?

Such action on the part of the Editor was not done at the bidding of the Censor, and therefore deserves to be shown up, with a view to such literary antics being relegated to the past, and to prevent them in the future.

In its issue of the 13th instant the brilliant paper in question gave a view of a narrow street in ruins, with three plain Renaissance arches on columns at the far end, facing the camera. It purported to be a view of the remains of Visé Town Hall, which was stated below to have been one of the "beautiful mediæval structures" Belgium has now lost! It was not even mentioned in Baedeker's "Belgium."

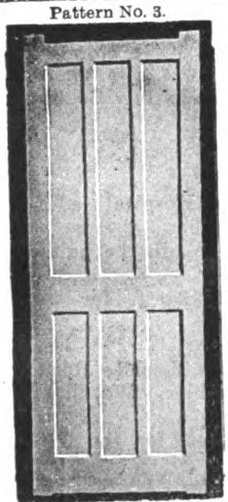
Another strange blunder in reporting occurred a little while ago, which I forgot to allude to in my article—viz. that the inhabitants of a certain town, while shells were falling in it, hid in *caves*! The nearest caves were at least twenty miles away. The telegrams gave, originally, the word "caves," which is French for cellars. The transcriber clearly thought he knew best.—Yours faithfully,

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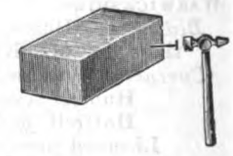
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THE
Architect and Contract Reporter.
FRIDAY, FEBRUARY 19, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s*., which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

COVENTRY.—The City Council invite competitive sketch plans for the erection of a public elementary school at Folly Lane, Coventry. The competition is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained on application at the Education Office, 44 Bayley Lane, Coventry.

CONTRACTS OPEN.

ATHERSTONE.—Feb. 22.—For erection of a public convenience in Station Street, for the Rural District Council. Mr. H. J. Coleby, engineer and surveyor, 102 Long Street, Atherstone.

BANWELL.—March 1.—For erection of a Council school at Banwell, for the Somerset County Council. Messrs. Jane & Fry, architects, Waterloo Street, Weston-super-Mare.

BARMING HEATH.—March 4.—For erection of an assistant medical officer's house at the Lunatic Asylum, for the Kent County Asylums Committee. The Engineer at the Asylum, Barming Heath, near Maidstone.

BARNSLEY.—March 4.—For erection of a new Town Hall in Church Street. Deposit £2 2*s*. Mr. W. P. Donald, Town Clerk, Town Clerk's Office, Barnsley.

BIRMINGHAM.—Feb. 25.—For foundations, &c., for a new shed in connection with the telegraph stores, Birmingham, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s*. The Assistant Architect, H.M. Office of Works, 42 Paradise Street, Birmingham, and H.M. Office of Works, &c., Storey's Gate, S.W.

BISHOP'S STORTFORD.—March 1.—For alterations and additions to Northgate County Council School, for the Hertfordshire County Council. Deposit £2 2*s*. Mr. J. S. Killick, county surveyor, Hatfield.

BRISTOL.—Feb. 23.—For erection of tower and main buildings of the University of Bristol. Send names and addresses to the architects not later than Feb. 23. When applying state what important buildings of a similar character have been built by them, and at what contract price, and from whose designs, giving architect's name for reference. From the applications received it is intended that names shall be selected for invitation to tender; but no name will necessarily be selected. Contents of building: probably upwards of three million cubic feet. Materials: principally local ragstone with freestone facings and dressings. Fireproof construction. Heavy English oak timbers for roofing. Joinery: English oak and other timber. Send applications by Feb. 23 to Messrs. Oatley & Lawrence, architects, 25 Orchard Street, Bristol.

CHRISTCHURCH.—Feb. 27.—For erection of a mortuary at their premises, Fairmile House, for the Guardians. Deposit £5. Mr. A. Druitt, clerk, Board Room, Fairmile House, Christchurch, Hants.

COALVILLE.—Feb. 26.—For erection of business premises, comprising three shops with showrooms and workshops over in Belvoir Road, for the Coalville Working Men's Co-operative Society, Ltd. Deposit £3 3*s*. Mr. T. I. McCarthy, architect, Central Chambers, Coalville, near Leicester.

DUNSTABLE.—March 2.—For erection of two additional wards on the site of the isolation hospital at Kensworth Lane, for the Dunstable and District Hospital Joint Committee. Deposit £2 2*s*. The Surveyor's Office, Town Hall, Dunstable.

EDMONTON.—Feb. 24.—For erecting and finishing fit for use an additional storey over the Board-room block and certain alterations to same at Edmonton House, Bridport Road, Upper Edmonton, for the Guardians of Edmonton Union. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

HUDDERSFIELD.—Feb. 25.—For proposed children's pavilion, to be erected by the Corporation at Bradley Gate, for the executors of the late John Sykes, J.P. Various trades as follows: (1) Mason and bricklayer (no drains, walks, or roadways); (2) concretor; (3) joiner and carpenter; (4) plumber, electrician, and heating; (5) plasterer; (6) slater; (7) painter. Mr. W. Cooper, F.R.I.B.A., architect, 4 Kirkgate Buildings, Huddersfield.

HUDDERSFIELD.—March 2.—For the various trades required to be executed in erection of a tuberculosis hospital at Bradley Gate, for the Corporation—viz.: (Contract No. 1) roads and drainage; (2) excavator, bricklayer and mason;

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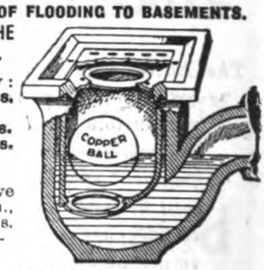


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(3) concretor; (4) carpenter and joiner; (5) plumber and glazier; (6) plasterer; (7) slater; (8) painter; (9) electrician; (10) heating engineer. Deposit £1 1s. Mr. K. F. Campbell, M.I.C.E., M.I.E.E., borough engineer, Town Hall, Huddersfield.

HUDDERSFIELD.—March 4.—For the various works required in the construction of a filter house and other works (all trades in one contract) on the south side of Blackmoorfoot Reservoir, Meltham, near Huddersfield, for the Corporation. The Waterworks Engineer, Town Hall, Huddersfield.

HULL.—Feb. 24.—For the builder's work in construction of a urinal in Division Road, for the Corporation. Mr. F. W. Bricknell, acting city engineer, Guildhall, Hull.

IRELAND.—Feb. 23.—For erecting the Getty schools (to replace the former Hemsworth Street schools), Belfast. Deposit £2 2s. Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

IRELAND.—Feb. 24.—For building in rubble masonry or in solid concrete brick lined 113 labourers' cottages, for the Balrothery Rural District Council. A contractor may tender to erect all the cottages, or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed, if the contract is for one or two cottages, within six months, and if the contract is for more than two cottages, within twelve months after they have been laid out by the Council's architect under a penalty for delay. Mr. A. Scott, C.E., architect, 49 Upper O'Connell Street, Dublin, or Mr. J. Stack, clerk, Boardroom, Workhouse, Lusk, Co. Dublin.

IRELAND.—Feb. 25.—For erection of a tuberculosis dispensary in the grounds of the County Infirmary, Tullamore. Mr. C. P. Kingston, secretary, Court House, Tullamore.

KIRDFORD-PLAISTOW.—Feb. 23.—For proposed remodelling of the Council school, for the West Sussex County Council. Mr. H. P. Roberts, F.R.I.B.A., county education architect, Thurloe House, High Street, Worthing.

LEYTON.—Feb. 23.—For the construction of underground conveniences at the junction of Church Road and Lea Bridge Road, for the Leyton Urban District Council. Deposit £10. Mr. E. H. Essex, A.M.I.C.E., Town Hall, Leyton.

LITTLE THURROCK (ESSEX).—Feb. 22.—For erection of a corrugated iron pavilion at the hospital of the Board, Long Lane, to contain about 24 beds, for the Orsett Joint Hospital Board. Charge for specification 10s. 6d. Mr. C. M. Shiner, architect, Gate House, High Street, Grays.

LEEDS.—March 4.—For the reconstruction of drainage at Leeds Head Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The Assistant Architect, H.M. Office of Works, Infirmary Street, Leeds.

LONDON.—For the execution of the necessary work in alterations and additions to 50 Leadenhall Street, E.C., in fitting same for a restaurant. Deposit £2 2s. Messrs. Veale & Huggins, quantity surveyors, 72 Finsbury Pavement, E.C.

LONDON.—Feb. 24.—For extending the washing shed at the Mead Ambulance Station, Carnwath Road, Fulham, S.W., for the Metropolitan Asylums Board. Deposit £1. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the office of the Board, Embankment, E.C.

LUTTERWORTH.—Feb. 24.—For erection, &c., of seven houses at Lutterworth, for the Rural District Council. Mr. A. J. Ross, surveyor, Lutterworth.

MANCHESTER.—Feb. 24.—For erection of a children's hospital on their estate at Withington, for the South Manchester Board of Guardians. Deposit £1 1s. Mr. F. H. Overmann, F.M.S.A., 49 King Street, Manchester.

NORTHAMPTON.—March 15.—For building 20 cottages at Hollowell, for the Corporation. Deposit £2. The Waterworks Office, Fish Street, Northampton.

NORTH SHIELDS.—March 6.—For pulling down existing buildings on the Union Quay, North Shields, and erecting and completing shop, stores, offices, &c., including reinforced-concrete retaining walls, floors, partitions, &c., for the Tynemouth Borough Council. Deposit £2 2s. Mr. J. F. Smillie, borough surveyor, Tynemouth.

OLDHAM.—Feb. 24.—For erection of an accumulator stores in Churchill Street East, for the Electricity Committee. The Borough Surveyor's Office, Oldham.

PONTEFRACT.—Feb. 23.—For erection of a boundary wall at the public baths, for the Corporation. Mr. J. E. Pickard, borough surveyor, Municipal Offices, Pontefract.

PONTEFRACT.—Feb. 24.—For erection of a retaining and boundary wall in Southgate, for the Corporation. Mr. J. E. Pickard, borough surveyor, Municipal Offices, Pontefract.

ST. HELENS.—Feb. 23.—For erection of a refuse destructor, together with all contingent works, at the Parr Depôt, within the borough. Deposit £2. Mr. A. W. Bradley, M.Inst.C.E., borough engineer, Town Hall, St. Helens.

SCOTLAND.—Feb. 22.—For the heating, engineer, and painter work of new car shed at King Street Barracks, for the Aberdeen Town Council. Mr. W. Dyack, M.I.C.E., burgh surveyor, Aberdeen.

SCOTLAND.—Feb. 22.—For the following works required in connection with the proposed erection of two lavatories and the alterations on four existing lavatories at Bellahouston Park and Queen's Park—viz.: (1) brick and mason works; (2) wright work; (3) plumber work; (4) slater work; and (5) painter work, for the Corporation. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—Feb. 27.—For the following works required in connection with the erection of public halls at corner of London Road and Summer Street—viz.: (1) excavator, mason and brick work; (2) carpenter and joiner works; (3) steelwork; (4) plumber work; (5) lath and plaster work; (6) tilework; and (7) asphalt work, for the Glasgow Corporation. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—March 1.—For the manufacture and driving of about 700 reinforced-concrete piles, together with other contingent works, comprising the foundations of the New City Hall, Dundee, for the Dundee Town Council. Deposit £1 1s. The City Architect, City Chambers, Dundee.

SHEFFIELD.—Feb. 25.—(Contract No. 134.) For building extension of engine-room, boiler-house, new switch-rooms, and stores at the Neepsend electric power station, for the Electric Supply Committee. Deposit £5 5s. Mr. S. E. Fedden, M.I.C.E., M.I.M.E., general manager, Commercial Street, Sheffield.

SCOTLAND.—March 1.—For extension of Leith Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. H.M. Office of Works, 3 Parliament Square, Edinburgh.

SHEFFIELD.—Feb. 25.—For the supply, delivery, and erection of roof principals and supporting steelwork in connection with extensions to the electric power station, Club Mill Lane, Neepsend, for the Electric Supply Committee. Deposit £1 1s. Mr. S. E. Fedden, M.I.C.E., M.I.M.E., general manager and engineer, Commercial Street, Sheffield.

STOCKPORT.—March 1.—The Cleansing Committee invite schemes and tenders for erection of a refuse destructor, including destructor house, furnaces, auxiliary plant, &c., at Heaton Lane, within the borough. Deposit £2 2s. Mr. J. Atkinson, A.M.I.C.E., borough surveyor, Town Hall, Stockport.

SHEFFIELD.—March 2.—For the excavation and construction of a concrete tar and liquor tank, 141 feet 6 inches long by 58 feet 6 inches wide by 24 feet deep, at their Grimesthorpe Station, for the Sheffield United Gas Light Company. Mr. J. W. Morrison, M.Inst.C.E., the Company's Offices, Commercial Street, Sheffield.

STOKE-ON-TRENT.—Feb. 25.—For the reconstruction of a portion of the roofing at the Hanley Baths, for the Corporation. The Borough Surveyor, Town Hall, Stoke-on-Trent.

TREDEGAR.—March 15.—For erection of a caretaker's lodge at the new cemetery, Cefn Golen, for the Tredegar Urban District Council. Mr. W. Lloyd Roach, surveyor to the Council, Bedwellty House, Tredegar.

WALKDEN (LANCS.).—March 5.—For the construction of a pump house for the Barton Old Hall sewage farm, for the Worsley Urban District Council. Deposit £2. Mr. J. Howard, surveyor to the Council, Town Hall, Walkden.

WALES.—For erection of residence facing Parc Howard, Llanelly. Mr. N. S. Chedburn, architect, 6 Stepney Street, Llanelly.

WALES.—Feb. 23.—For alterations and additions to medical hall, Cardigan, for Mr. H. Morgan. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

WALES.—Feb. 23.—For carrying out additions and alterations at the Workhouse, Caersws, Montgomery, for the Guardians of Newtown and Llanidloes Union. Deposit £1 1s. Mr. R. W. Davies, M.S.A., architect, Carno.

WALES.—Feb. 25.—For alterations and remodelling a building on the site of the Greek Church at Cardiff into an Archimandrite's residence, for the Committee of the Greek Community, Cardiff. Deposit £1 1s. Mr. C. James, F.R.I.B.A., architect and surveyor, Charles Street Chambers, Cardiff.

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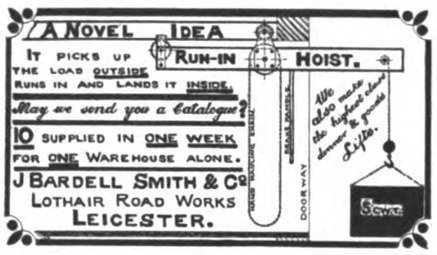
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TENDERS.

ASHTON-UNDER-LYNE.

For erection of Mossley Road Council School, to accommodate 600 children, for the Ashton-under-Lyne Education Committee. Messrs. EATON, SON & CANTRELL, architects, Stamford Street, Ashton-under-Lyne.

E. MARSHALL & SONS, LTD., Cockbrook Saw Mills, Ashton-under-Lyne	£9,497 0 0

BROADSTAIRS.

For the construction of the following works at the proposed town depôt at the rear of Grosvenor Road—viz.: (*a*) Buildings, cart sheds, cottage, fencing, &c.; (*b*) weighbridge, for the Urban District Council. Mr. H. HURD, C.E., surveyor, Broadstairs.

Town Depôt.

Saunders & Co.	£2,369 10 0
Godden & Son	2,087 0 0
Martin	1,940 0 0
Culver	1,798 0 0
Philpott	1,719 0 0
White	1,660 0 0
Dagley Bros.	1,634 0 0
Attwood & Co.	1,625 0 0
Cro	1,558 9 0
Surveyor's estimate	1,755 9 9

Weighbridge.

Pooley & Sons	£86 0 0
Chayney & Co.	84 10 0
Hodson & Sons	79 0 0
Ashworth, Sons & Co.	78 0 0
Avery & Co.	74 10 0
Surveyor's estimate	80 0 0

LICHFIELD.

For additions to the Children's Homes, for the Guardians.

J. R. DEACON, Lichfield (*accepted*)	£284 15 0

LITTLEHAMPTON.

For erection of an isolation hospital at Wick, near Littlehampton, for the Urban District Council. Mr. H. HOWARD, F.S.I., surveyor, Littlehampton, Sussex.

Crane	£3,818 11 0
Drake & Co.	3,627 0 0
Cook & Sons	3,240 0 0
Fenn	2,984 0 0
Snewin Bros.	2,903 0 0
J. LINFIELD & SONS, LTD., Littlehampton (*accepted*)	2,743 0 0

For erection of public lavatories, &c., at Sea View Cottage, near Parade, for the Urban District Council. Mr. H. HOWARD, F.S.I., surveyor.

Drake & Co.	£1,247 0 0
Fenn	1,127 0 0
Crane	1,084 12 0
J. LINFIELD & SONS, LTD., Littlehampton (*accepted*)	968 0 0

LONDON.

For carrying out alterations to the Police Station at Limehouse, E. Mr. J. DIXON BUTLER, F.R.I.B.A., New Scotland Yard, S.W.

Holland & Hannen	£2.333 0 0
Holmes	2,278 0 0
Rice & Sons	2,232 0 0
Jarvis & Son	2.159 0 0
Monk	2,146 0 0
Patman & Fotheringham	2,026 0 0
N. Lenn Thornton & Co.	2,006 0 0
Newby Bros.	1,912 0 0

For erection of a police station at Bethnal Green, N.E. Mr. J. DIXON BUTLER, F.R.I.B.A., New Scotland Yard, S.W.

Todd & Newman	£11,781 0 0
C. Wall, Ltd.	10,850 0 0
Adamson & Sons	10,768 0 0
Higgs & Hill	10.750 0 0
J. Garlick	10,600 0 0
Dickens	10,535 0 0
Prestige & Co.	10.455 0 0
Sheffield Bros.	10,422 0 0
Smith & Son	10,340 0 0
Jarvis & Sons	10,304 0 0
Roome & Co.	10,296 0 0
Dove Bros.	10,281 0 0
Patman & Fotheringham	10.171 0 0
Jerram	9.844 0 0

MALDON.

For the erection of a recreation ground keeper's lodge and ladies' lavatory, also a gentlemen's convenience, on the Public Recreation Ground, for the Town Council. Mr. T. R. SWALES, M.I.C.E.I., borough engineer and surveyor, Maldon.

Sherling	£793 0 0
Woodyard	785 0 0
Potter	700 0 0
Rayner	675 10 0
Smith	610 19 0
SPALDING, SONS & Co., Norwich (*accepted*)	600 0 0

PENZANCE.

For the erection of twenty-two workmen's houses, for the Corporation. Messrs. COWELL & DREWITT, architects, Penzance.

H. THOMAS & SONS, Crowan (*accepted*)	£4,946 15 0

PONTYMISTER.

For the erection of a boys' and girls' school to accommodate 600 children, for the Monmouthshire Education Committee. Mr. J. BAIN, F.R.I.B.A., Newport.

R. JONES, Caerphilly (*accepted*)	£7,885 0 0

PORTSMOUTH.

For carrying out of extensions to the Infectious Diseases Hospital at Milton, comprising the addition of three new wings, a nurses' block, extension of laundry, mortuary, &c., for the Town Council. Mr. ARTHUR W. WARD, borough engineer, Portsmouth. Quantities by Mr. CHARLES W. BEVIS, Portsmouth.

Lavington, Ltd.	£29,514 0 0
Moss	27,526 0 0
Franklin (Deddington), Ltd.	26,895 0 0
E. & A. Sprigings	26,200 0 0
Corke	25,736 0 0
Evans	25,500 0 0
Salter	25,472 0 0
Privett	25,127 0 0
Crockerell	24,916 0 0
J. TANNER, Castle Road, Southsea (*accepted*)	24,400 0 0

SWADLINCOTE.

For building shopping premises in High Street, Swadlincote, for Mr. James Woodward. Mr. GORDON ALLEN, A.R.I.B.A., architect, 13 Holmdale Road, West Hampstead, N.W.

EDWIN CLARKE, Woodville (*accepted*)	£1,026 0 0

TORRINGTON.

For the erection of five cottages in Well Street, for the Town Council.

DARCH (*accepted*)	£1,027 19 9

THE church of St. Olave, Hanbury Street, Mile End, is about to be pulled down and its site and the vicarage sold. The church, which was built in 1876, has been disused for some time past. The church hall will be retained. The proceeds of the sale will be devoted to the erection of a new church at Harlesden, dedicated to St. Mark. The parish of St. Olave has been added to that of All Saints, Buxton Street, from which it was separated in 1876.

ROTHERHAM Borough Council recently appointed as their surveyor, at a commencing salary of £500, rising to £700, Mr. William Shackleton, M.I.C.E., the Borough Surveyor of Nelson. Yielding to pressure, Mr. Shackleton has decided to retain the Borough Surveyorship of Nelson, and has been granted an advance of salary. The Nelson Town Council has several important schemes in hand at present. Mr. T. P. Collinge, Borough Engineer and Surveyor of Mansfield, was second on the list for the appointment.

THE Plymouth Borough Council, at their meeting last week, approved the proposed extension of the Borough Lunatic Asylum at Blackadon to accommodate 440 additional patients, and that Messrs. Thornely, Rooke & Barron, architects, be instructed to prepare plans. The cost of the extension is estimated by the borough treasurer at £100.000, and the annual cost of interest and sinking fund, after deducting lodging money now paid by Devonport and Stonehouse patients, being excess over the Plymouth rate of maintenance of 10*s.* 7*d.* per week, works out at £2,647, or equivalent to a net increase in cost to the rates of two-thirds of a penny in the £.

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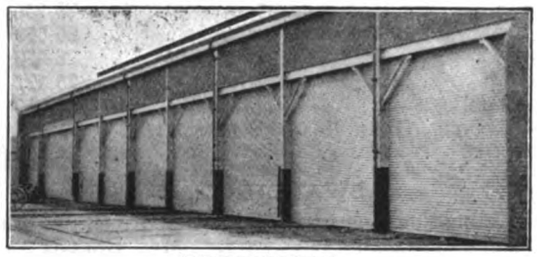
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FACULTY OF SURVEYORS OF SCOTLAND.

MR. ALAN K. SMITH occupied the chair at the annual general meeting of Fellows of the East District Section of the Faculty of Surveyors of Scotland, which was held at 117 George Street, Edinburgh, on the 12th inst. The annual report showed an increase of thirteen in the number of members on the roll compared with the preceding year. During the year the Council had been principally engaged, in conjunction with the West District Section of the Faculty, the architectural societies, and the Scottish National Building Trades Federation, in adjusting a national mode of measurement for carpenter and joiner work. The funds at December 31, 1914, amounted to £250 2*s.* 10*d.* The Chairman, in moving the adoption of the report and accounts, stated that a considerable number of Fellows, assistants, and apprentices were engaged with H.M. Forces, and that a complete list was being compiled. The report and accounts were adopted. Messrs. Robert Jerdan, F.F.S., Edinburgh, and William Gauldie, F.F.S., Dundee, were appointed new members of Council.

The second annual general meeting of the West District Section of the Faculty of Surveyors of Scotland was held in the Christian Institute, Glasgow, on the 11th inst. Mr. Howatt, Chairman, presided over a large attendance of members. Mr. Howatt, on demitting office as Chairman of the West District Section, received a cordial vote of thanks for the services he has rendered to the Faculty during his two years of office. The following office-bearers for session 1915 were elected:—Chairman, Mr. John Baxter, 243 St. Vincent Street, Glasgow, who also becomes *ex-officio* Vice-President of the Faculty; secretary and treasurer, Mr. William Johnstone, 150 St. Vincent Street, Glasgow.

THE VACUUM CLEANER.

THE removal of dust by vacuum cleaners is in principle so hygienically sound that when once it had been proved to be possible to remove all dust from floors, walls, carpets, furniture, &c., by a system of air suction (which not only extracted the dust but also conveyed it beyond the walls of the building) it became a question only of how quickly it would be universally adopted. At the present time it can hardly be said to have achieved such general use, but in all new buildings, such as hospitals, public offices, warehouses, stores, &c., an installation for vacuum cleaning is provided for in the plans, and in some form is to be found in most houses even when otherwise unpretentious.

The principle being accepted, it naturally followed that numerous devices for accomplishing it should be put on the market, having in common the extraction of dust by means of the exhaustion of air, but differing in the mechanism by which it is effected.

In the smaller cleaners the motor is actuated by current taken from the electric-light connections, but as their cleaning capacity is limited they are only adequate to the area of a moderate-sized house. For larger buildings the power has been obtained from the water supply or the air displacement effected by pumps or ejectors, and each system, when fitted by competent firms, has provided a satisfactory means of extracting and disposing of dust.

To obtain the fullest efficiency from vacuum cleaning it is necessary that a stationary plant be installed in the basement, with permanent suction mains running through the various floors, having connecting-points at convenient intervals on each floor for attaching the flexible hose, to which is fixed the cleaning implement, and through which the dust-laden air is conveyed and exhausted outside the building.

The Sturtevant Engineering Company, Ltd., have brought their long and varied experience in designing apparatus for controlling the movement of air and rendering it a useful servant to bear upon the subject of vacuum cleaning, which is embodied in the Turbine Vacuum Cleaner. By their high-pressure electric Air Turbine they obtain the movement of a large volume of air at a high velocity at constant pressure, fluctuating automatically to meet the varying conditions of cleaning, whilst maintaining the full intensity of suction. This provides that at each cleaning-point the suction is efficient whether one or six are being used at the same time, and as they do not develop a very high vacuum when working against resistance, there is no risk of damage to carpets, tapestries, or upholstery.

An important feature about this cleaner is that the amount of current consumed is regulated by the number of operators at work. Its fresh air displacement, irrespective of the size of the installation, should be not less than 80-100 cubic feet per minute per cleaning implement. The plant has been designed with a special effort towards simplicity; there is nothing which, presuming reasonable care is taken, should get out of order.

ENGINEERING OPERATIONS FOR THE PREVENTION OF MALARIA.*

By FRANK DUDLEY EVANS, Assoc.M.Inst.C.E.

ANYTHING which relates to the health of communities and labour forces is of importance to engineers, but the disease referred to in this Paper, malaria, is of particular interest to them. The effects of malaria are often terrible, and may lead to very high death-rates. Its effect on works in new countries is to greatly increase their first cost and cost of maintenance, and it may lead to their abandonment.

Malaria occurs more or less in all warm climates, and is caused by parasites of the blood which are injected by anopheline mosquities. These mosquitoes first take the parasites from infected man when sucking blood. Thus part of the life of the parasite is spent in man and part in the mosquito. Quinine is the remedy for malaria. No attempts to transmit malaria except through the agency of mosquitoes have been successful.

Mosquitoes are distinguished from other insects by various characteristics, but, like other insects, their life is divided into four stages—the egg, the larva, the pupa, and the imago. The egg is laid on water and develops into the imago, or adult winged insect, in about ten days. Mosquitoes are favoured by certain conditions and diminished by others.

The principal families of mosquitoes that concern man are those belonging to the groups *Culex*, *Stegomyia*, and *Anopheline*.

Some *Culex* mosquitoes carry elephantiasis.

Some *Stegomyia* mosquitoes carry yellow fever.

Some anopheline mosquitoes carry malaria.

Anopheline larvæ and adults may easily be distinguished from *Culex* and *Stegomyia*. They are, as a rule, swamp breeders, hence the long-observed association of marshes with malaria.

The measures to combat and prevent malaria are:—

(1) Destruction of anopheline mosquitoes, either of adults or larvæ.

(2) Protection of man from the bites of infected mosquitoes.

(3) Prevention of mosquito infection by suitable treatment of infected man.

Most malarious countries have applied to some extent one or all of these measures; a few examples of anti-malarial campaigns and their results are given in an Appendix to the Paper.

Quinine may be used as a remedy and a preventive. Screening is effective in keeping mosquitoes away from man under certain conditions. Mosquito larvæ may be killed by oiling or poisoning their breeding-places, or breeding-places, such as water-vessels, may be screened.

The most important method of reducing Anophelines is by drying land by means of thorough drainage. In hill-land subject to heavy rainfall such work presents many novel problems, but has been successfully accomplished in the Federated Malay States at a reasonable cost.

Ravines in the Malay States, unless exceptional, can only be made dry by a continuous drain running completely round the hill-foot, cut on a line at a little above the wet surface level. Open earth or masonry drains are useless for the purpose, and it has been found that the only way to construct permanent hill-foot drains is to use agricultural drain-pipes as subsoil drains, and to provide outlet drains of open masonry or subsoil pipes to carry off their discharge. The pipes are proportioned to run not more than one-quarter full in ordinary dry weather (one-fifth full for drains over 6 in. in diameter). The use of pipe drains less than 4 in. in diameter is not ordinarily advisable, owing to the liability of their choking. The pipes are laid at a depth of 3 ft. to 4 ft. (or even deeper on steep slopes); they have been laid at the heads of ravines on slopes of 1 on 3 with satisfactory results.

Trees must be removed from the vicinity of pipe drains, as their roots may grow into and choke the pipes. Undergrowth and long grass should not be allowed to grow up for the same reason.

* Abstract of a Paper read at the ordinary meeting of the Institution of Civil Engineers on Tuesday, February 9.

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As economy is all-important in anti-malarial work, it is rarely possible to provide masonry drains large enough to carry all flood-water, and these are, therefore, usually calculated to run one-sixth to one-fifth full in ordinary dry weather, and are surcharged during floods. An inexpensive and thoroughly efficient type of drain has been evolved to meet the conditions, formed of concrete blocks of half-egg shape, laid close but unjointed. The blocks are laid without foundations even on bad ground in flowing water. Should they move out of line or gradient, it is easy to re-set them correctly when the surrounding ground has settled, after which they give no trouble; but re-setting is rarely necessary.

The principal difficulty in draining hill-land lies in maintaining the drained surface undamaged. After some years' experience, it has been found that the most economical method is the use of grass, kept close cut. Small masonry dams are used in rock cuttings, and timber dams are used under certain circumstances. The method to be used depends on the quantity of silt carried by flood-water.

With proper care open drains may be connected to subsoil drains if necessary.

Maintenance of drainage work is most important, as small faults, if neglected, may cause a whole system to be ineffective.

The co-operation of engineering, land and medical authorities is necessary to success in carrying out measures directed against malaria, but engineers can effect much on construction work by giving effect to a few simple rules.

Two important problems in malarious hill countries are those connected with the enormous quantities of silt which are washed off agricultural estates, and mine tailings, which, if not dealt with, may do immense damage and ruin large tracts of country.

VARIETIES.

The Rutherglen Town Council have appointed Mr. J. Gaff Gillespie, architect, Glasgow, to prepare amended plans for the reconstruction of the Town Hall; and Mr. George Sinclair, architect, Glasgow, amended plans for the erection of new buildings at the Old Manse site in Main Street.

The Water Committee of the Aberdeen Town Council recommend that a Bill be promoted in Parliament for a new scheme from the river Dee at a cost of £450,000 for a supply of 10,000,000 gallons daily. The scheme includes a new aqueduct, storage and settling reservoirs, and liming and filtration plant.

The *Board of Trade Journal* states that inquiry is made for the names of United Kingdom manufacturers of brick presses and artificial building stone (reference No. G.W. 1,134). Communications relating to this, quoting the reference number, should be addressed to the Secretary, British Chamber of Commerce, 9 rue des Pyramides, Paris.

In connection with the organisation and extension of the Derby Workhouse and Infirmary, a comprehensive scheme has been submitted for the consideration of the Guardians. Provision is required for 618 inmates of all classes (378 men, 210 women, and 30 children). For the proposed new infirmary, which is estimated to cost £35,000, the Derby Corporation have offered tweve acres of land to the Guardians at £200 an acre, and considering this low figure the committee strongly urge its acceptance.

Dunfermline School Board have decided, in order to meet the growing population in Crossgates, to erect a new school in that village capable of accommodating 640 pupils. The new building will possess several features new to the schools under the Board, including a spray bath, a gymnasium, and medical inspection rooms. The Board have also committed themselves to the principle of providing a temporary building for the teaching of mental defectives.

The Three Towns branch of the Devon and Exeter Agricultural Society have written to the Plymouth Borough Council, stating that, having regard to the extension of the borough and the great probability of general works of a public character to be entered upon, the members asked the Council to consider the desirability of engaging the services of the several architects now practising in the borough, and for that purpose suggested that the principle of a selection by rota be observed as far as possible.

The Dublin Municipal Council, at its last meeting, adopted reports of the Housing Committee, recommending: (*a*) The acceptance of the tender of Messrs. Alexander Fraser & Co., of this city, amounting to £28,480, for the erection of 146 dwellings (divided into two-room and three-room) on the Beresford Street and Church Street area. (*b*) The acceptance of the tender of the same firm, amounting to £15,352, for the erection of sixteen two-room tenements in Luke Street, thirty-two two-room tenements in Moss Street, and twenty-eight three-room cottages in Maguinness Place, all situated in the Trinity Ward.

At the Manchester Town Hall last week Mr. P. M. Crosthwaite held an inquiry for the Local Government Board respecting the City Council's application for sanction to borrow £60,000 for works of sewerage in the city area, and £1,775 for the purchase of property in the township of Flixton adjoining the Davyhulme sewage disposal works. With reference to the application for leave to borrow £60,000, Mr. T. de Courcy Meade, city surveyor, was the only witness. The money was needed, he said, for new sewers at East Didsbury, Princess Road, Mauldeth Road to Moseley Road, and for the drainage of Millgate Lane and Stenner Lane.

Mr. W. M. Cross, M.Inst.C.E., one of the Inspectors of the Local Government Board, held an inquiry at Nottingham last week into an application by the Notts County Council to borrow about £122,000, made up as follows: Additions to County Lunatic Asylum, £30,000; police station accommodation, £8,000; additional buildings, Ransom Sanatorium, £2,000; additional Road Board loans, £28,500; institution for mental defectives, £40,000; emergency works (workmen's cottages, improvements for highways, &c.), £5,000; Kingston Agricultural College, £4,000; isolation hospitals, £5,000.

Official notice has been given in the Private Bill of the House of Commons that it is not the intention of the London County Council to proceed any further this Session with their Bill to establish an electricity authority for London and the surrounding districts. The only Bill dealing with this subject now before Parliament is one promoted by the majority of the electricity companies in London. Notice has already been given in the House of Commons by Sir Edwin Cornwall, on behalf of the London County Council, to move the rejection of this Bill on the motion for its second reading.

A sessional meeting of the Royal Sanitary Institute will be held in the Municipal School of Technology, Manchester, on Friday, February 19, when discussions will take place on "The Construction of Sewers" (illustrated by lantern slides), to be opened by Mr. S. S. Platt, M.Inst.C.E. (borough surveyor, Rochdale), and "Housing from a Sanitary Inspector's Standpoint," to be opened by Mr. H. Dryland (Sanitary Department, Manchester). The chair will be taken at 7 p.m. by Sir Henry Tanner, C.B., I.S.O., F.R.I.B.A. (Chairman of Council). On Saturday, February 20, an inspection will be made of a portion of the new main drainage scheme of the city.

A duplicate of the statue of Lord Roberts, by the late Mr. Harry Bates, A.R.A., which is in the Maidan at Calcutta, is to be erected in Glasgow on a site not yet selected. The equestrian figure is 11 ft. 6 in. high, and stands on a pedestal 18 ft. 6 in. The lower part of the pedestal is formed of a base with columns, panels, and inscriptions, flanked at one end by a bronze figure in ancient and decorative armour representing "War," and at the other end by a female figure representing "Victory" seated on the prow of the ship of State. The frieze at the top of the pedestal shows the various branches of the Army with which the late Lord Roberts was connected.

The Dean and Chapter of St. Paul's have lent to the Geffrye Museum, Shoreditch, forty-one objects of artistic and antiquarian interest. They are for the most part woodwork and ironwork placed in the Cathedral in the time of Sir Christopher Wren, but subsequently removed from their original positions in the course of alterations from time to time. There are many fine specimens of wood carving, some of which are from the hand of Grinling Gibbons. An interesting series of carved oak mouldings is exhibited in such a way that sectional drawings may be taken of them by students. The woodwork includes a prayer desk, a door with a wrought-iron panel, an overdoor, stall brackets, trusses, and an oak capital, all beautifully carved. Scarcely less interesting are the specimens of wrought iron, including as they do some choice examples of Tijou's work. It is to be hoped, says the *City Press*, that the Dean and Chapter will allow these loans to remain on public view for a considerable time, if not permanently, in preference to stowing them out of sight in the crypt of the cathedral.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, March 1.

Royal Institute of British Architects : Special and Business Meetings, Election of Royal Gold Medallist, at 8 P.M.

Tuesday, March 2.

Society for the Promotion of Roman Studies : Papers entitled "The Production of Samian Ware and its Development" and "A Note on a Visor Helmet from Nijmegen, Holland," by Mr. James Curle, F.S.A., at 4.30 P.M.

Wednesday, March 3.

Royal Archæological Institute : Paper entitled "The Sciapus and other Abnormal Human Forms in English Church Carvings," by Mr. G. C. Druce, F.S.A., at 4.30 P.M.

Carpenters' Hall : Paper entitled "Chelsea Antiquities," by Mr. Walter H. Godfrey, at 7.45 P.M.

Thursday, March 4.

London University : Lecture entitled "Architecture in Belgium since 1840," by R. M. Victor Horta (director of the Academy of Fine Arts, Brussels), at 5.30 P.M.

Concrete Institute : Paper entitled "Some Notes on Wind Pressure," by Mr. R. Graham Keevill, at 7.30 P.M.

SLIGO ABBEY.

THE annual reports of the Commissioners of Public Works in Ireland usually contain interesting descriptions of ancient monuments remarkable, not only for their archæological importance, but for their architecture. In the latest issue we find an excellent account of Sligo Abbey, which was founded in 1252 for Dominican Friars by Maurice Fitzgerald, son of Gerald, first Baron of Offaly, who was the first to bring the Dominican Franciscan Orders to Ireland. The *Annals of Loch Cè* give the date of its erection as 1253. Among the dates of importance in the history of the Abbey are 1360 A.D., when it and the town were built by MacWilliam Boucher; 1414 A.D., when they were again accidentally burned down; and 1416 A.D., when the Abbey was rebuilt by Friar Bryan MacDonogh, son of Dermod MacDonogh, tanist of Tirerrill and Collooney, with assistance from Pope John XXIII., who granted indulgences to all who contributed to its restoration.

Much damage was done to the building in 1595, when George Bingham, brother of the President of Connaught, took possession of the Abbey while besieging the neighbouring castle, and used much of its woodwork in making engines for the siege. During the wars of the sixteenth century the Abbey was often occupied and fortified. In the disturbance of 1641 the town of Sligo was burned by Sir Frederick Hamilton, and it is said the Abbey was at the same time burned, together with the friars who had returned to it, two of them who tried to escape being killed by the soldiers.

The church consists of nave with side aisle and south chapel or transept, and choir separated from the nave by a rood screen and tower. The west wall of the nave is non-existent, but the dimensions of this part of the church appear to have been 74 ft. 8 in. by 21 ft. 6 in. The south aisle was 50 ft. by 13 ft.; the transept 33 ft. 10 in. by 21 ft. The choir appears to have been originally 60 ft. 3 in. in length by 21 ft. 4 in. in breadth internally but the tower, which seems to have been a later insertion, reduced the length of the choir to 44 ft. The plan, therefore, is of typical Irish character, and, of course, has a square east end. North of the chancel was a vaulted sacristy with a room over.

The choir, sacristy, and a portion of the chapter-house—which, with the cloister and abbey buildings, is to the north of the church—are the oldest portions now existing. From the dates given above one might suppose that the detail would be of later character than is the case. The south wall of the choir is pierced by eight lancet windows, 1 ft. 5½ in. in width and 14 ft. in height widely splayed internally and separated by broad piers. They are, therefore, of much earlier type than one would expect to find in England in 1253. Still more remarkable is the east window. Of this we are told that "the original east window was a triplet, the lights of which were similar to the lancets in the south wall; these were removed about the end of the fifteenth century, and a moulded window of four lights with geometrical tracery was substituted." The drawing of the substituted window shows a perfect reticulated-tracery head of the type that may, in England, be put down invariably as very close in date to 1325, and it is difficult to understand that even in Ireland such a window should have been inserted so late as "about the end of the fifteenth century." One would suppose that the writer of the article had allowed his judgment to be warped by the date of the rebuilding by Friar Bryan MacDonogh, but we should feel inclined to attribute this window to some unrecorded work of restoration between the burnings of 1360 and 1414, even if not before that of 1360. It is scarcely likely that even if this latter catastrophe, and that of 1414, spared the original triplets, they would have remained until the end of the fifteenth century before a reticulated tracery window was substituted. The only justification for the assignment of this date is the character of the nook-shafts to the rear-arch, and these might very likely be a late fifteenth-century restoration of those damaged by the fire of 1414. We should be prepared to allow that the rear-arch itself belongs also to this late date.

The north wall of the nave is pierced by three windows, each of two pointed lights 9 ft. 1 in. in height and 1 ft. 4 in. in width, coupled together with chamfered jambs and mullions. These, though later in date, no doubt, than the chancel lancets, were, we think, part of the church commenced in 1253, and not new features introduced after the fire of 1360 or that of 1414. The arcade in the south wall of the nave is one of three lofty arches, 12 feet in span, opening into the side aisle and transept. The arches are pointed, of "Decorated" form, and have inner and outer ribs chamfered on both sides. The piers are 12 ft. in height and 4 ft. 5 in. by 2 ft. 11 in., with moulded capitals. The character of these arches and piers clearly indicate that the aisle was a fourteenth-century addition, either before or shortly after the burning of 1360. Of the transept few particulars are given, but from those supplied we should believe that this was part of the work of Friar Bryan MacDonogh.

One of the most interesting features of the church is the inserted tower, which was erected without disturbing the walls of the choir, and has a breadth of only 14 ft. 3 in., supported on a choir arch of 15 ft. 4 in. span, so that the side walls of the tower rest entirely on the

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haunches of the choir arch. From the detail given we are inclined to attribute the tower to Friar Bryan MacDonogh.

Another highly interesting feature of the church is the stone rood-loft, of which only small portions remain, from which a "restoration" on paper, sufficiently probable, shows it to have been carried on an arcade of three arches. The detail of the remains indicate that the rood screen was an introduction made after the restoration of the damage caused by the fire of 1360, on the assumption that all the detail of the church is of later date than would be found in England at the same period. Otherwise it must be regarded as anterior to 1360.

The stone altar, we are told, has been re-erected from the original stones, and is of unusual size—11 ft. 9 in. in length, 4 ft. 4 in. in breadth, and 3 ft. 3 in. in height. The front is highly carved, its length being divided into nine panels, with cusped ogee heads and foliage carving of the fifteenth century; in one panel a rose is carved, and in another bunches of grapes. The altar table is formed of five slabs, one of which is an insertion. The remaining four exhibit a cross and an inscription, one word of which is on each stone. The words remaining are "Me. Iohan. Fieri. Fecit." It is suggested that the missing stone probably bore the surname of the donor of the altar.

Of the domestic buildings of the Abbey there are only fragments. They show that the cloister garth was almost square, the dimensions being 50 ft. from north to south, and 42 ft. 6 in. from east to west. The refectory was situated on the upper floor, and the place for the reader's pulpit may be seen over the northern cloister arcade.

There are a number of monuments and memorial stones exhibiting a great variety of style and period, some of the carving being of great excellence in design and execution. Many shafts, capitals, and arch stones have been rescued from the rubbish that had accumulated. Repairs, or rather preservative works, have been carried out during the past year; these include principally the removal of ivy and elder bushes from the walls, the clearing away of rubbish, and the re-pointing to joints and exposed tops of walls.

NOTES AND COMMENTS.

Naturally we are specially interested in this winter's Special Number of *The Studio*, which is entitled "Sketches by Samuel Prout in France, Belgium, Germany, Italy, and Switzerland," and contains reproductions of drawings that we have included in our own portfolio of "Continental Sketches by Samuel Prout." We also naturally prefer our own reproductions, which are of the full size of Prout's drawings, to the reductions given by *The Studio*, and certainly feel that the *timbre* of Prout's work is more adequately expressed by the larger scale lithographs. The winter number contains an excellent biographical and critical monograph of the life and art of Samuel Prout, by Ernest G. Halton.

The history of the scheme for establishing in Great Britain the manufacture of dyes, which British industries use annually to the value of nearly two and a quarter millions sterling, of which about one and three-quarter millions used to come from Germany, is illustrative of the chief difficulty that British manufacturers and merchants feel in attempting to capture enemy trade. This difficulty is that the circumstances which enabled the enemy countries to obtain so large a proportion of our trade before the war will be revived after peace is restored. Our manufacturers are loth to invest capital in plant and other expenses necessary to capture trade so long as they feel that when peace arrives that capital will have been sunk to no further purpose, and they also are confident that the war will not last long enough to enable them to recoup the capital sunk. The Tariff Commission has obtained a volume of evidence which points unmistakably to the conclusion that the dye industry must be protected in some way against foreign competition before the necessary capital will be forthcoming.

We are somewhat amused at the claim for novelty put forward in a contemporary for the use of brick in the mullions of tracery for the windows of a suburban church recently erected in Essex. The existence of such work five hundred years and more old, in Pomerania, ought to be known to every architectural student, not to speak of the by no means few examples to be found nearer home, even in the county of Essex. For instance, at St. Osyth, near Clacton, the nave piers with their caps and bases are in moulded, as distinguished from cut, brick.

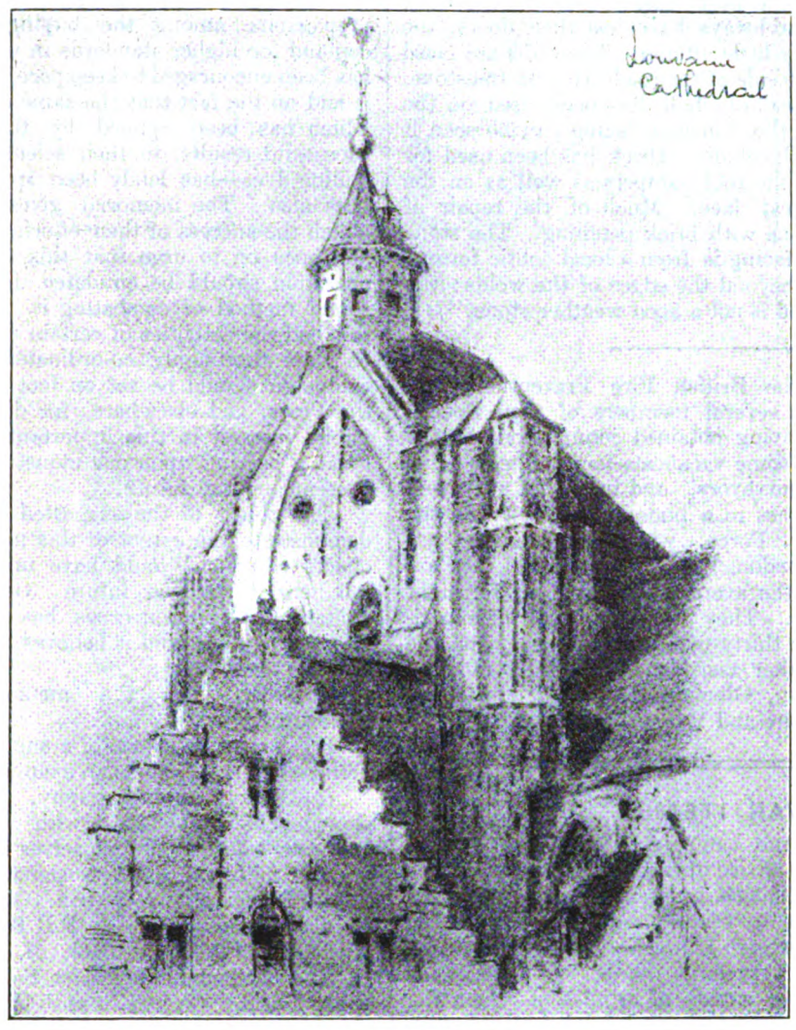
In the United States it is no uncommon thing for reinforced concrete buildings to come down with a crash before they are completed, but, happily, in this country such occurrences are rare. Therefore the collapse of an addition to paper mills at Bury is a notable exception, and we hope the cause will be made indubitably clear in the course of the coroner's inquiry.

The law and practice as regards ecclesiastical dilapidations has worked, on the whole, fairly smoothly, though with undoubted cases of individual hardship. Revision is proposed in the Bill drafted by Queen Anne's Bounty, but this, more particularly in altered circumstances, brought about by the consolidation of Diocesan Boards of Finance, is open to criticism, some of the most vital of which was voiced by the Archdeacon of Ely in the Lower House of the Convocation of Canterbury.

There had been in the past, he said, considerable doubt among members of the House as to the lines upon which they ought to move. There had now, however, come to be a general consensus of opinion on three principles, all of which might be in themselves criticised. They were compulsory surveys, annual payments towards dilapidations, and the payment of surveyors by salary and not by fee. The Archdeacon expressed his sense of the debt of gratitude which Churchmen owed to surveyors for the work they had done for the Church for many years past. What was the machinery which was to bring into effect the principles agreed upon? Ten years ago there was no sort of machinery for the purpose, but in the Bill which had been drafted by Queen Anne's Bounty a new machinery had been created, consisting of a central authority with local Advisory Boards, and this new machinery was to be set up, it was proposed, all over England, without any very careful regard to diocesan divisions. The local Advisory Boards need not be diocesan, and the range from which the inspectors were appointed might include the areas of one or more dioceses or parts of dioceses. The rearrangement of the areas of inspection would be made in accordance with what the central authority found the most suitable for carrying on the work. Since the scheme was drafted an enormous change in ecclesiastical organisation had come about. There were Boards of Finance in every diocese, and it appeared to him that there would be a certain inconvenience in creating new local advisory bodies instead of giving the work to the present Board of Finance. They did not want to have so much new machinery as was indicated in the draft Bill. There was a good case for reconsideration, and the Joint Committee of the two Provinces, which had the matter in hand, determined that it was desirable at the present juncture to report progress and give an opportunity for reconsideration as to the mode of bringing the principles into effect. He urged that over-centralisation should be avoided, and expressed the belief that the machinery of the Bill would not work well, but with slight changes could be made to work as well as most machines did.

The Lords Feoffees of the Manor of Bridlington have been forced to take into consideration the question of the preservation of the historic old Bayle Gate, which stands near to the Priory Church. Mr. John Bilson,

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LOUVAIN CATHEDRAL.
From a Sketch by Mr. HUON A. MATEAR, F.R.I.B.A.

F.S.A., F.R.I.B.A., has reported on the work to the lords, and in his statement there is the following interesting historic sketch of the structure:—

"In 1388 a licence was granted by King Richard II. to the Prior and Convent of Bridlington to surround the Priory with walls and houses of stone and chalk, and to fortify and crenellate such walls and houses. The Bayle Gate was evidently built as part of this scheme of enclosure and defence, and it is, therefore, nearly contemporary with the sister house of Austin Canons at Thornton in Lincolnshire, the licence to crenellate the latter being granted in 1382. The survey of the Priory buildings, made immediately after the dissolution of the monastery by Henry VIII., contains the following description of the Bayle Gate:—

"'At the coming in of the same Priory is a Gatehouse four square of tower fashion, builded with freestone and well covered with lead. And on the south side of the same Gatehouse is a Porter's Lodge with a chimney, a round stair leading up to a high chamber, wherein the three weeks' Court is always kept, with a chimney in the same, and between the stair foot and the same high chamber where the Court is kept be two proper chambers, one above the other, with chimneys. In the north side of the same Gatehouse is there a Prison for Offenders within the Town called the Kydcott. And in the same North side is a like pair of stairs leading up to one high chamber, and in the same Tower with a chimney mem. that all the windows of the said Tower be clearly without glass.'

"In spite of some alterations of more recent times, the Gatehouse still remains substantially as it is described in this survey. The building measures externally about 55 feet from north to south, by 31 feet from east to west. Through the middle of it is the roadway, 23 feet square internally covered with a groined vault. This passage is approached from the west (towards the town) through two archways, a wide one on the south side with a narrower one for foot passengers on the north. Eastward (towards the Priory) there is one wide archway. On each side of the central passage are the two small chambers mentioned in the survey, of three storeys in height below the top floor. Access to these was given by newel staircases, one on each side on the east face, approached by doorways in the side walls of the passage way at their east end, which staircases, or traces of them, still remain. Over all is the High Chamber or Court Room, which occupies the whole of the upper storey. An almost flat roof covers the whole.

"The walls are strengthened by buttresses on each side of each of the four angles, with further buttresses flanking the archways on the east and west faces. The lines of the north and south walls are broken by slight projections externally for the fireplaces, and at the eastern end of the south wall is a projection arched below for the garderobe shoots. The upper part of the west face seems to have undergone some reconstruction, and is now plastered, apparently on brickwork. The date of 1797 on the heads of the rainwater pipes may perhaps indicate the period of this reconstruction.

"The south side has undergone more recent and somewhat drastic renewal, and the windows of the high chamber have been renewed. Internally this high chamber has been modernised, and it is now approached by a

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modern staircase in the north-east corner. Otherwise, and except that the archways have lost their doors, the building has been very little altered. The walls are faced externally and on each side of the roadway with freestone, except that a good deal of chalk has been used on the north side. Where the internal facing can be seen it seems to be principally chalk. Brick has been used for the reconstruction of the roof parapets as well as on the upper part of the west face. Much of the repair of masonry has been done with brick patching. The stone used for the external facing is from a local oolitic formation which crops out beyond the edges of the wolds; it is loosely compacted, and is not a good weather stone."

We learn from the British Fire Prevention Committee that, owing to several members of their Special Fire Survey Force having obtained commissions in the Army, there are now some vacancies for architects, civil engineers, building surveyors, and insurance surveyors who are prepared to act in a honorary capacity on the Special Fire Survey Force, whose headquarters are 8 Waterloo Place, London, S.W. Professional men are required to give, on the average, one day per fortnight (generally Saturdays). They should be men of experience, preferably over thirty-five years of age, and the districts in which further assistance is specially required are Cornwall, Durham, Gloucestershire, Somersetshire, Warwickshire, Wiltshire and Worcestershire.

WAR ITEMS.

In connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and List 8*b* of articles which inquirers desire to purchase is now ready and may be obtained by United Kingdom manufacturers and traders.

British firms interested, as suppliers, in any of the goods mentioned should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

A memorial, signed as under, and containing suggestions for a counter-attack upon German art industries, has been presented to Sir Hubert Llewellyn Smith, Permanent Secretary to the Board of Trade.

The committee responsible for the memorial, consisting of workers in various industries affected by German competition, were received at the offices of the Board of Trade by Sir Hubert Llewellyn Smith, Sir Lewis Selby-Bigge (Permanent Secretary to the Board of Education) being also present. They were invited, as an initial step, to submit a collection of enemy products, which they have got together, with a view to an exhibition being held under the auspices of the Board of Trade.

The memorial points out that the remarkable expansion of German trade, achieved largely at the expense of our own, has resulted not simply from the energetic exploitation of fresh markets, but also in a striking degree from the untiring efforts which the Germans have made to improve the quality of their work. During recent years the intelligent co-operation of artists, educationists and manufacturers (assisted by such organisations as the Deutsche Werkbund), with the object of freeing their products from the stigma of "cheap and nasty," has resulted in a marked improvement in the higher grades of German manufactures.

Side by side with this, there has been a widespread propaganda among the buying public, whereby the demand for higher standards in workmanship and design has been encouraged to keep pace with the supply. Stress is laid on the fact that the same educational co-operation which has been applied by the Germans, with such successful results, to their scientific manufactures—*e g.* aniline dyes—has lately been applied to their art industries also. The memorial gives instances of trades in which the success of their efforts has been most marked, and goes on to urge that this far-seeing policy of co-operation should be emulated in England as the only sound method of combating it. It is suggested that to this end the activities of certain public authorities should be more thoroughly co-ordinated, and that a vigorous campaign should be set on foot through the medium of the Press, and elsewhere, for directing and stimulating public interest in this important matter, which has so great a bearing upon our industrial welfare, both in the present and the future.

The object of the suggested exhibition would be to demonstrate the extent of this new German rivalry, the effects of which would have made themselves severely felt here in the near future. Germany herself, by precipitating the present crisis, has given us a respite from this competition, and it behoves us to take advantage of it while we may.

Together with the memorial were sent two enclosures:—

(*a*) A short synopsis of a suggested campaign, taking pottery and porcelain as an example;

(*b*) A note on lithography, prepared by an expert, showing the completeness with which the Germans have been able to establish themselves in the English market.

The following are the signatories:—Lord Aberconway, Sir Kenneth Anderson (Orient Line Steamships), Frank Brangwyn, R.A., P.R.B.A., Fred. V. Burridge (Principal, Central School of Arts and Crafts), B. Fletcher (Principal, Leicester School of Art), C. H. St. John Hornby (W. H. Smith & Son), John Marshall (Marshall & Snelgrove), H. E. Morgan (Controller, W. H. Smith & Son), James Morton ("Sundour Fabrics," Carlisle), Frank Pick (Underground Electric Railways), H. Gordon Selfridge (Selfridge and Company, Limited), Frank Warner and Sons (Silk Weavers), H. G. Wells (author).

Committee.—Ambrose Heal, F. Ernest Jackson, J. H. Mason, H. H. Peach, Hamilton T. Smith, Harold Stabler.

Hon. Secretary.—Cecil C. Brewer, 6 Queen Square, Bloomsbury, W.C.

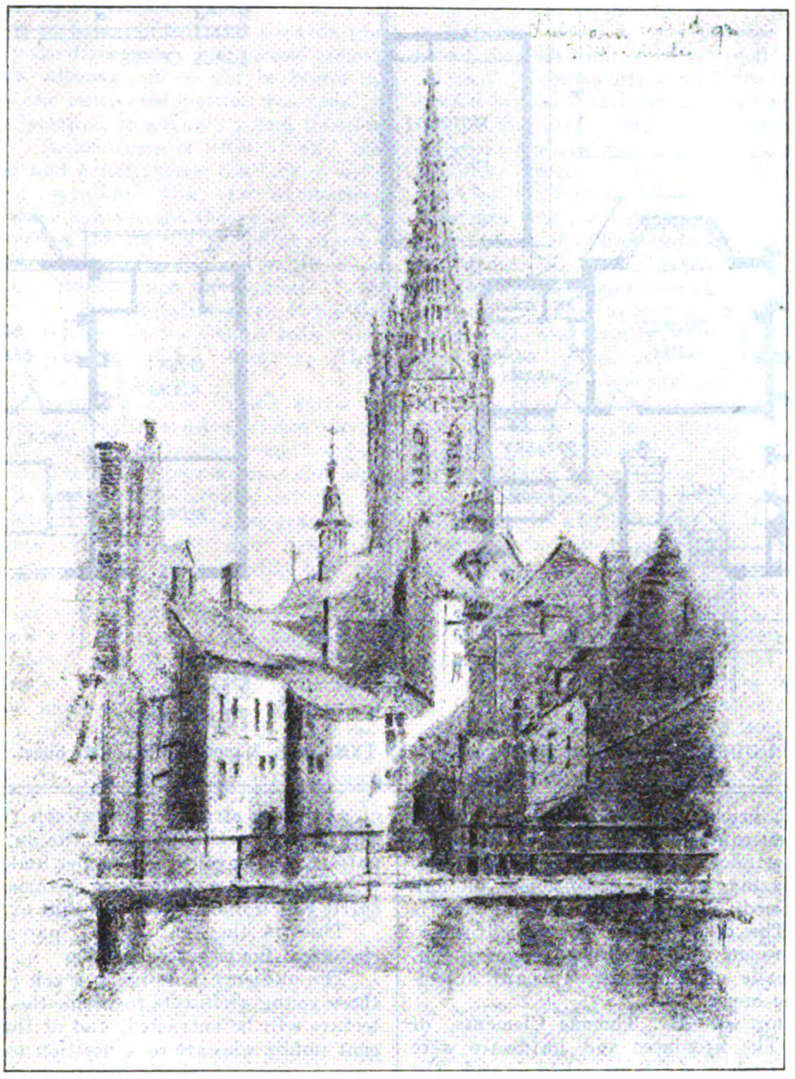
R.I.B.A. EXAMINATIONS.

The Board of Architectural Education announce that the designs submitted by the following Students who are qualifying for the Final Examination have been approved:

***Subject xviii.*: (*a*) Design for an organ-case in a circular hall: Foot, A. A.; Gordon, P. J.; Hull, V.; Knight, W. G.; Lawson, J. Scott; Sanders, T. A.; Tebbutt, H. J. (*b*) Design for a group of small dwellings for twelve aged couples: Brown, W. J.; Cash, H. W.; Filkins, E. W.; Gordon, P. J.; Hall, R. B.; Holden, W.; Jackson, R.; Kassem, H. Z.; Keep, N.; Knight, S.; Luyken, H. M.; Lyne, E., jun.; Medd, H. A. N.; Minns, S. E.; Mitchell, C. H.; Moss, D. J.; Philp, A. T.; Picton, C. S.; Routley, L. J.; Saxon, F. C.; Taylor, M. B.; Thomas, D. R.; Whitehead, P.; Wilkinson, F. Designs for other subjects, from the following candidates, have also been approved: Ap Gruffydd, C. O.; Fisher, H. N.; Gray, G. H.; Moore, R. S.; Wood, A. G.**

The Royal Academy give notice, in connection with the forthcoming exhibition, that the day for receiving architectural drawings, engravings, black and white drawings, miniatures, pastels, and water-colours is Friday, March 26. Not more than three works may be sent by one artist.

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CHURCH OF ST. GERTRUDE, LOUVAIN.
From a Sketch by Mr. HUON A. MATEAR, F.R.I.B.A.

COMPETITION NEWS.

GOUROCK.—Mr. A. N. Paterson, M.A., F.R.I.B.A., of Glasgow, has been placed first in a limited competition for extensions to the Town Hall. Sir John J. Burnet was the assessor. The cost is estimated at £8,000.

MACCLESFIELD.—The Macclesfield Lands, Railways, and Town Development Committee have considered the plans submitted by eleven competitors for three prizes offered by the Committee for houses to be built at a cost not exceeding £180. Twelve sets of plans were sent in, but several were for houses exceeding the £180 limit, and only five were considered. The first place was awarded to Messrs. H. K. Rostron & Co., 21 Jordan Gate, but before the successful competitors can receive the prize of £15 15s. they are required under the terms of the competition to find a builder who will erect a house to their plans and specifications for £180. The borough surveyor (Mr. S. C. Baggott) acted as assessor in the competition.

SOUTHEND.—The award has just been made known in the recent competition for the new housing scheme at Ruskin Avenue, Southend-on-Sea, for the Southend-on-Sea Corporation, the design submitted by Mr. Percy G. Hayward, M.S.A., of 4 Broad Street Buildings, Liverpool Street, E.C., and Queen's House, Hamlet Court Road, Westcliff-on-Sea, being awarded the first premium. Mr. Percy Brockbank, of County Chambers, Southend-on-Sea, was placed second.

SHIPLEY.—New public offices are to be erected by the Urban District Council on the site of the old Manor House from plans prepared by Messrs. Anderton & Bailey, architects, Shipley and Keighley, and selected in open competition. Fifty-five designs were sent in which were adjudicated upon by the assessor, Mr. F. E. P. Edwards (architect to the Sheffield Corporation), who awarded the first premium of £100 to Messrs. Anderton & Bailey.

ILLUSTRATIONS.

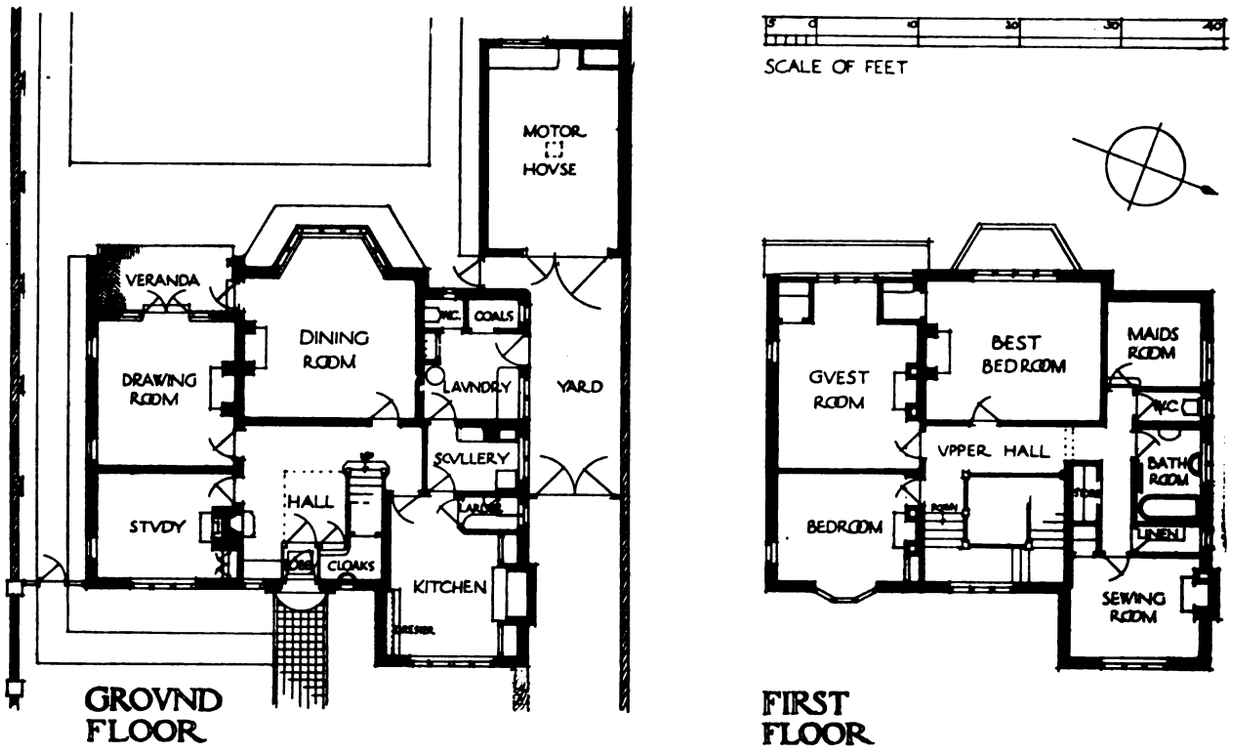
DEVONPORT MUNICIPAL BUILDINGS COMPETITION.

IN preparing this design the authors (Messrs. Leslie Wilkinson & Alan Binning, AA.R.I.B.A.) were influenced by the fine and unusual situation of the irregular and steeply sloping site, a vast open space extending in front to Mount Wise and the sea and flanked by the Raglan Barracks and other naval and military establishments. As to the composition, the great dominating mass of the Guildhall and Courts would serve to unify the whole, with its front office blocks surrounding the Council Chamber as the central feature. The police and fire stations, with exercising yards, &c., were planned on the rear portion of the site, with good road access. The materials proposed were local limestone walling, with grey granite dressings in this and the general design, carrying on the fine local traditional work of the early part of last century and accounting for a certain breadth of treatment and largeness of scale.

HOUSE AT FENHAM, NEWCASTLE-ON-TYNE.

THIS house has been erected for Mr. I. Turner, and stands on a site of 60 feet frontage. The walls are faced with 2½ inch Harrogate sand-faced bricks pointed in white mortar, with thin Prudham stone window sills. The roof is covered with Rosemary tiles. A special feature is made of the hall, with its open staircase and Austrian oak panelling and floor. The floor of the entrance lobby and front steps are of white Sicilian marble. The ceilings of the drawing and dining rooms are enriched with "Stuccolin" decoration, while that of the best bedroom is coved. The walls of the scullery are faced with white glazed bricks, and the bathroom and w.c. have tiled dadoes. The floor of the

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HOUSE AT FENHAM, NEWCASTLE-ON-TYNE.—Mr. Marcus K. Glass, Architect.

verandah is paved with brick on edge, laid herring-bone pattern, and the main entrance path with 9-inch red Staffordshire squares. All window casements throughout have diamond pattern lead glazing, with the exception of the hall window, in which stained glass treated heraldically is sparingly introduced. The door and window furniture in the hall and reception rooms are of oxidised silver finish. A special point was made of adequate cupboard accommodation throughout the house.

The general contractor was Mr. Thomas Clements, of Jesmond, Newcastle. The fireplaces and hardware were supplied by Messrs. Emley & Sons, Ltd., and the electric light fittings by Messrs. Verity, Ltd. The architect is Mr. Marcus K. Glass, M.S.A.

THE ARCHITECTURAL ASSOCIATION.

An ordinary general meeting of the Architectural Association was held on Monday, the 22nd inst., at Tufton Street, Mr. H. Austen Hall, acting President, in the chair.

It was announced that the ordinary general meeting arranged for March 22 has been postponed to Tuesday, March 30, as Mr. Hilaire Belloc finds himself unable to be present on the former date. Mr. Belloc's paper, to be read on March 30, at 8 p.m., is entitled "The Changes in the Conception of Artificial Permanent Defence, including those indicated by the Present Campaign," and will be illustrated by lantern slides.

The nomination by the Council of the following offices for Session 1915-1916 was duly approved:

House List.

President: Mr. H. Austen Hall. *Vice-Presidents*: Mr. Stanley Hamp and Mr. F. Winton Newman. *Hon. Treasurer*: Mr. E. Stanley Hall. *Hon. Secretary*: Mr. H. M. Fletcher. *Hon. Editor "A.A. Journal"*: Mr. F. C. Eden. *Hon. Librarian*: Mr. V. T. Hodgson. *Ordinary Members of Council*: *Past President*: Mr. Maurice E. Webb, Mr. C. C. Brewer, Mr. H. Farquharson, Mr. Ralph Knott, Mr. A. G. R. Mackenzie, Mr. E. Brantwood Maufe, Mr. W. G. Newton, Mr. W. J. Palmer-Jones, Mr. J. Alan Slater, Mr. T. Tyrwhitt, and Mr. Philip E. Webb.

Mr. A. E. Richardson then read the following paper entitled

The Architectural Spirit of the Age.

Few things reveal the character of nations in a truer light than the circumstance of war. For the contrast to normal conditions throws into strong relief the temperament of a people and demands an introspective mood. Such a time is the present; the leading nations are gripped in the throes of a titanic struggle; henceforth the whole complexion of things will be changed, and the outlook of individuals and nations will broaden to a deeper understanding of life. War is beneficial to a nation; it invariably brings a chastening spirit which finds its most cogent expression in architecture.

This is the text of my paper, the sermon and the rhetorical flourishes will follow.

The audience I desire to reach consists of two parts: of those young architects to whom the future of English architecture will be entrusted, and of that portion of the intelligent public who are in a position to exercise patronage and appreciation. I shall endeavour to express the truths I have gleaned from a study of modern architecture and to indicate sources of inspiration which, although familiarly known, are not appraised at their true value. It is essential that we as English architects should emancipate ourselves from the cloying influence of insular apathy, enjoy an enlarged vision of architectural achievement in other countries, and to profit by the experience.

The travelled section of the public has a disinterested view of modern architecture and therefore is in a position to voice its likes and dislikes. It is, notwithstanding, bewildered by the jargon of opposing schools; it cheers to the echo newspaper controversy and endeavours to believe in the latest resuscitation of some threadbare style. In despair it turns to pure reproduction and continues to live in buildings of familiar aspect. But all the time there is a sense of keen disappointment that the new building does not equal the old work either in spaciousness or simplicity, and, despite the expense, does not approach the excellence of some dimly remembered foreign structure.

Recent years, however, have witnessed remarkable earnestness among the younger members of the profession, and we have seen the development of architectural schools whose work sufficiently testifies to the serious purpose of the students. This is a sign auguring well for the future; its immediate results are discernible in the streets of our cities. From the foregoing it is reasonable to argue that the future development of architecture in this country on academic lines is dependable on two primary factors.

First, the education of architects; this must be consistently undertaken to fit them for the position of arbiters of taste. They will then be the better equipped to guide the public, and above the temptation of pandering to the passing fashion. Secondly, the public must be encouraged to an understanding of what organic architecture means, and weaned from the lures of the house decorator and the furniture dealer.

The eighteenth century affords an instance of the attitude of patrons and architects. In the early period the patrons educated the architects and directed the mode; the latter,

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however, were not content to be exploited, and towards the second half of the century the directorship had passed almost entirely to the architects, although it should be borne in mind that in those days the cultivated patron was usually a man of taste and in a position to advance sound theories for the artists to accept. To-day there is little, if any, co-operation between patron and artist, hence the lack of confidence, the warring of opinions, and the numberless innovations, all of which are against the theory of the art. The nineteenth century was in the main a period of experiment during which the strength of the Classic tradition as developed from the Italian Renaissance was proved. I do not refer to the tradition in Great Britain, which is purely local, but to the broader acceptance of the Classic spirit and its manifestations on the Continent and in America. This is the subject for which I make my appeal.

From an architectural standpoint the Classic spirit is what we are all striving for; it implies a disinterested search for the ideal; it means the delight in reticence and perfection; moreover, it is the reverence for permanence and continuity. It demands of a work of architecture, not that it shall be clever and original, but that it shall be grand and noble. It forswears loose individuality and hysterical emotion and seeks to express trained individuality and restrained feeling.

The Classic spirit is animating and real; it continually looks for the intrinsic and will not countenance the casual. It is akin to the monumental and the eternal and rejects the instantaneous, however brilliant. It is indivisible from tradition, in which it is steeped and revels. When the Classic spirit inheres in a work of architecture it forces one subjectively to recall the whole atmosphere of beauty belonging to the works of antiquity; it brings to the mind visions of form and composition, faintly remembered, and we discern the old truths appearing anew as the chief attributes of the building we are studying. A clear interpretation of the Classic spirit means a return to the sheer joyousness of living; it does not mean that we are to deny either originality or personality to our architecture; these are among the essentials, they are inevitable, and are encouraged by the conditions of the problem. But we should endeavour that our new buildings in all the dignity of their truth present anew the old spirit seen from a modern standpoint and adjusted to our own age.

The eclectic tendencies of the last century which were directed to the exploitation of historical motifs are now undergoing a further extension owing to the advance of our point of view. Formerly it was the practice to adhere to certain recognised sources of inspiration, such as Greek, Roman, and Italian, with a friendly eye on contemporary France. Parallel to this procedure there rapidly developed a tendency to resuscitate the picturesque and romantic buildings of our insular history culminating in a series of indecisive revivals. We are just recovering from this outburst of misapplied activity, and, although in amateur quarters opposition is offered, the neo-Classic tradition of three hundred years will prove the basis for further development.

The attitude we shall in future adopt towards the antique will be akin to the use of a touchstone—we shall measure our achievements by the relics of antiquity, but we shall never again make the mistake of pedantry. It should be borne in mind that the native tradition is not strong enough of itself to be expanded continuously; it needs to be constantly augmented and fostered by the fusion of fresh ideas. Native and local traditions, notwithstanding their brilliancy, need careful tending; there is a limit to their development, hence revivals of a local style inevitably end in a species of cul de sac. If our attitude towards the Classic spirit is broad enough our position is strengthened, for we can look upon all styles from Egyptian to Italian as members of one family, and for the sake of argument we can include Hindoo and Chinese. The exploitation of any one of these styles would be dangerous, but modern investigation has proved how limited are the moves governing composition and how immutable are the laws of design; this allows of the study of form irrespective of history.

The Classic ideal, as I wish to present it, has little in common with the usually accepted idea of the "Classic School" either of the Renaissance or of to-day. It is Greek in its modernity, Roman in its breadth; it holds all the charm of Italy and the mystery and colour of the Orient. Its purpose is to add stone by stone to the pyramid of tradition, but it does not seek to overthrow the structure.

I now come to the main object of my paper, which is to explain the theory of modern architecture and to hint vaguely at future developments, signs of which are already in evidence. It is not my purpose to deal extensively with recent English work, a better picture of that subject can be obtained by comparing it with the notable buildings recently erected on the Continent and in America. My interpretation of the term "Modern Architecture" is a wide one; it embraces the last two centuries of building evolution and includes structures from Petrograd to Gibraltar, from America to Japan. This course of action enables me to illustrate the tremendous impulses at work shaping the architecture of to-day and destined to influence the work of the future. To prove, on the one hand, that development in design is gradual and depends entirely on the work which has preceded it, and, further, to show how every departure from the sensible and usually accepted leads to meaningless caricature. The iniquitous example of competitions, together with the apathy and carelessness of many architects who do not take their profession seriously, accounts in a measure for the tricky originality and affectation which disfigures English work of to-day.

To rightly estimate the future development of architecture, except through the media of current events, is a task for the Medes and Persians; it is only possible to conjecture what may be reasonably expected from the best activities of the present time. The progress of architecture reveals the intellectual stamina of a people in a way that nothing else does, but there is every indication that the esoteric art is at last assuming an international character, is tending towards academic principles, and the banishment of provincialities from design. In time there will ensue a universal building language understood by all the nations; it implies the realisation of the Classic spirit. In England at present we are desperately lagging in the track of other countries; this is not a lamentation—it is the truth. We are outclassed by the French in their handling of plan and traffic problems, and we are jealous of our American cousins. Our own tradition is little understood and falsely rendered, few realising that the spirit of the tradition alone needs consideration, and not, in the lust for originality, a mad caricaturing of its finest models.

We are on the point of broadening our artistic horizon to the true meaning of modernity and to study the Classic masterpieces of every country; no longer are we passionate to revive historical expressions, but fired with the greater ambition to emulate and excel those masterpieces that have aroused our cupidity. It is at last realised that the romantic and picturesque are not the sole attributes of architectural expression; that laws of form, composition, character, and propriety must be given full consideration. The Babylonian confusion of the past years is clearing and a way out of the architectural maze is shown by the old Classic truths; we have advanced to-day in our critical powers, if not in attainment. It is necessary to approach the problem of design from the Classic standpoint, in the full acceptance of that euphonious term, to view varying conditions of building with that distant attachment which alone produces noble architecture. To reason and apportion plans and elevations in sympathetic consonance, to refuse meretricious and popular movements in favour of the academic, and to elevate intellectual architecture in the public estimation. The possibilities of future development likely to arise from an observance of this theory are illimitable. We must not take too much account of the convenient signposts raised by litterateurs who divide art history into phases and groups and attempt to influence public opinion in a personal way, but we must regard the whole Classic field as offering models; then we shall understand the symbols of our own time and adjust them to specified requirements. Foreigners attribute our weak attitude towards art to the fact that we do not possess a Ministry of Fine Art, owing to the reluctance of our rulers, as well as physical insensibility and the sordid nature of our commercial habit. Many opine that the Protestant religion is the cause: the failing exists in our inaccessibility to foreign ideas of form and composition.

It is my firm conviction, and I feel sure you will agree, that the spirit of the age, in so far as architecture is concerned, is to be found in the world's architecture of the last two centuries. This period contains the impulses which are moving us to-day. True, during this time many experiments were attempted, but these we can afford to pass by; the real achievements alone concern us. If we study our own Classic tradition from Inigo Jones to Cockerell we are surprised at the up-to-date character of the best works, and we are sufficiently conversant with the rules to continue the sequence; this procedure, however, is not entirely satisfactory. We must refer to the French school, particularly to those works of the eighteenth and nineteenth centuries, from Mansart to

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Pascal, and the comparison will prove our shortcomings. We must explore the cities and towns of Italy for the buildings of the same period, particularly Turin, Naples, and Rome. I could name a host of Italian architects whose works should be studied, but those of Maderno, Niccolini, and Sacchoni are comprehensive. Likewise, the work of the Austrian architects in the cities of the Trentino, for example, Nobile, Ferstel, Pertsch, and Molari at Trieste, and Von Hansen at Vienna, and others at Buda Pesth. The modern architecture of Spain has never been clearly explained. The magnificent buildings at Petrograd and Moscow, legacies of the Napoleonic *regime*, are unknown to the majority. Even modern Greece and the cities of the Balkan States hold good motifs. And then we have the example of America with its wealth of modern architecture and the passionate obsession of its leading architects for scholarly work.

Finally, I must add a word for Germany, not in favour of the modern hobgoblin pickel hauben manner, which to my view appears as the play of vulgar children, and in its coarseness shows the brutal influence of the military spirit, but to German architecture of seventy years ago when the French influence was in the ascendant. I need only mention the names of Langhans, Schinkel, Leo van Klenze, and Chateauneuf to convince you of what Germany has lost. We are in a position to-day to refer to and appreciate at their proper value the great folio volumes of the nineteenth century: the compilations of Durand, Krafft and Ransonette, Thiollet, Letarouilly, Haudebourt, Rossini, Isabelle, Canina, and others. These books formed the chief treasures in the libraries of such men as Cockerell and Barry, and I am told that McKim was well versed in their use. Such splendid guides to the theory of architecture should prevent us from following the fatal lure of individualism, and their study should promote consistent sequence. It should also be remembered that an individual architect can do little to work a change; styles of building have been the work of centuries, the produce of nations, and the influence of a single mind can do little to alter the trend of events.

I must warn young architects of the fetish of craftsmanship which has been worshipped to excess; also of the doctrines of many who hold the creed that design is the outcome of construction, and forget that the reverse is the case; conception of the whole inevitably precedes the construction of parts, the latter function being entirely secondary. There is, of course, some overlapping in the application of this theory, but it is recognised that conception subordinates all other considerations. There are two other items to be thought of, namely, adventitious originality and the practice of innovating detail. Both evils are found in contemporary English architecture: one consists of a passion for extraordinary composition of masses, and the other, a lesser evil, is the desire to evolve new suites of mouldings. Both methods are complex and false and collectively result in a species of Art Classic which in effect is the worst legacy of L'Art Nouveau. Then we have the commercial school, noted for its inability to understand architectural character. The coteries who form this school are content to filch any features which are in the fashion and to display their crustacean trophies without regard to convenience or beauty. I have expounded my idea of the term "Modern Architecture." I have referred you to the Antique for beauty of conception, technique and detail, to the Italian Renaissance for pure form, to the French for modern planning and composition, to the English tradition for reticence, to America for breadth of outlook and enterprise, to modern Italy for vigour, and to Germany for frightfulness. By means of the lantern slides I hope to qualify my arguments, and the following synopsis will show the line I intend to take. We shall view some important buildings of the English tradition, followed by the parallel development in America. Then we must discuss some notable examples of the French tradition in France and other countries. I shall touch lightly on one of the finest buildings in Naples. If there were time to pursue the subject we could undertake a world tour. My object will be to show that the modern domestic school needs chastening if it is to compete with the highest examples of the Georgian period in England and the Colonial in America, and that convenience, spaciousness, and simplicity are of more importance than pretty effects. From the monumental architecture of France and America you will deduce opinions concerning similar work in the British Empire.

The whole of my remarks can be summed up in this quotation from one of Professor Cockerell's Academy Lectures given in the 'forties:

"The studies of the beauties and defects of celebrated buildings should be the aim of the scholarly architect; this was the confirmation of theory and led to that knowledge of form and combination which makes the accomplished architect. The importance of this confirmation of theory was admitted by every practical architect. No man invented an order or a series of mouldings, these he accepts from the greatest and most reputed masters' works who have preceded him; he stores designs, books, and portfolios, and prides himself, like the lawyers, on his precedents and authorities. Absolute invention he never proposes to himself for a moment, but by a large study of history and examples he is enabled to detect the petty prejudices of schools, to emancipate himself from the trammels of nationality and fashion, and to regard the works of all times and countries as subject to his own use so far as they may be conformable to strength, convenience, and beauty."

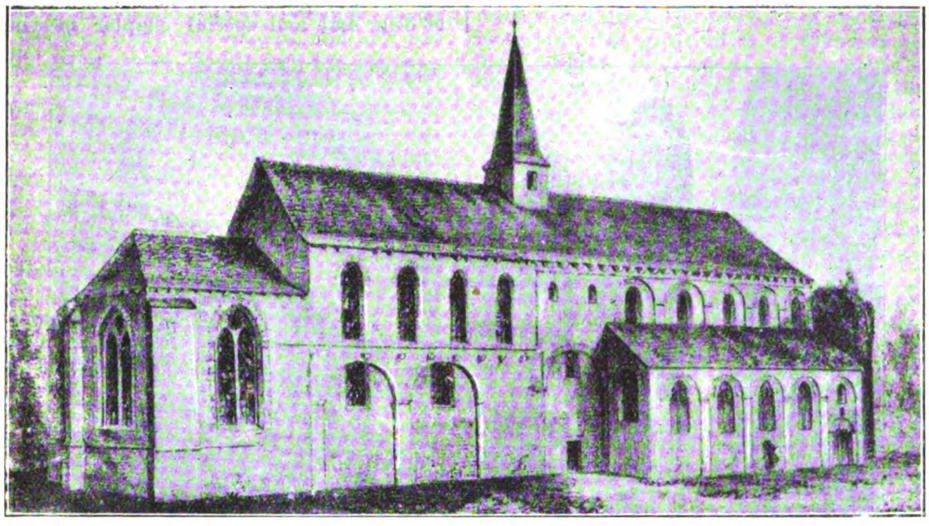
I am not a prophet or a magician, and I cannot lift the veil to show future architecture. I am, nevertheless, firmly assured that the buildings I intend to bring before you to-night contain the secret of the future.

DISCUSSION.

Sir J. J. Burnet, in proposing a vote of thanks, said he felt quite exhausted by the pleasure of the circular tour which Mr. Richardson had taken them, and its very great variety of intensely interesting work. The lecturer had accompanied the display of slides by a running commentary which was sometimes more severe, especially of local work, than seemed quite prudent. But one had to agree with a great deal of what he said. It was all an excellent exhibition of the truism that architecture, no matter of what country, is simply the expression of a cultured mind of the requirements of the generation in which it lives. That phrase, "the expression of the cultured mind," could not be too often reiterated to students. They had just been shown a building designed by military engineers, and another by a lawyer, and he thought it was proof enough that capacity on the part of the architect to intelligently and sensibly meet the requirements of his day with a cultured mind did not confine itself to the possessors of the power of draughtsmanship and the power to show beforehand what is to be done. The architects had for some years thought so much of the drawings and of the interest they could put into them that their architecture had run a great risk of escaping them altogether. If they could get the student to see that his first duty is to get thorough mastery of the craft of architecture he will realise that it involves drawings, specifications, and so on. It may take him years, possibly, to instil any artistic language into his soul; but he could not do it better than by getting into touch with the masterpieces of the past. Architects might try to look on their art more as the painter and the sculptor do on theirs. They should study the past not with a view to remembering its details, but to get its spirit. Having once got that spirit, they would keep it all their lives, and would adapt it to the requirements of the present age. That spirit and not the style should arouse their enthusiasm. He did not think any conscious desire to express originality or any conscious desire to imitate a past style was anything but a form of priggishness—it was not architecture. Even in their conscious restraint the best works of the past were peculiarly lacking in anything like pose. They knew the cultured man went straight to his requirements. It was that faculty the schools could not give a student; they could only help by placing the finest things before him and letting it develop during the rest of their lives. On the other hand, they could bring before him the consciousness which underlay construction. But before a man can construct and design he will generally have learnt enough of the science of construction to know whether or not what he has designed can be constructed. Nowadays architects had to assemble from a great variety of crafts, and there was too much to learn for them to pose as a teacher of every craft. An innate affection for those he has to employ enables the architect to choose sympathetic craftsmen. With such co-operation they could get triumphs of architecture which had never been excelled. At no time was the architect's client more capable of saying what he wanted. At no time were craftsmen more skilled. It lay with architects to give them schemes worthy in spirit of the co-operation of the fine draughtsmen we have and a scheme which will fitly show the men who come after what great clients and what great craftsmen we had.

Mr. Arthur Stratton said that those who had followed Mr. Richardson's writings and his executed work in the last few years knew perfectly well they would hear a paper

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HASTIÈRE-par-delà.—THE BENEDICTINE ABBEY IN 1856, BEFORE RESTORATION

characterised by scholarship and mastery of the problems of modern architecture as the lecturer understood it. Seldom had they listened to a paper more full of inspiration and more suggestive. Those who are not so familiar with Mr. Richardson's personal enthusiasm might hardly be prepared for such a revelation. To have had such buildings put before them, the pick of several countries, was a privilege they would look back upon many a time in the future. Mr. Richardson's ideas were undoubtedly fine, his vision of a world architecture was inspiration. But they left out certain aspects of architecture which have governed the building arts for thousands of years, and it seemed as if some of those considerations could not be wafted aside. They had had put before them the works of architectural giants. The pitfalls in the path of such a course of study were many—as some were finding out in daily work. But it was very fine, all the same, that they should have these high ideals put before them. Fortunate indeed was the man whose work passed through the fire of Mr. Richardson's criticism unscathed, for it was only masterpieces which appealed to him. He had set before them the Classic ideal; and it was quite evident he would have the architects of to-day and the future, as they should be, men of culture. Culture was defined by Matthew Arnold as "the study of perfection." That, he believed, was the culture Mr. Richardson would spread, and not "Kultur." The address had mentioned the name of Schinkel and other great German architects; but none of their works had been shown. To his (Mr. Stratton's) mind theirs was not the culture wanted in England, and he saw in those works a certain atmosphere which he could only describe as "swank." We in this country were in danger of getting it. One need not hesitate to link it up with its true source, which was Munich-Berlin. Mr. Richardson over and over again referred to the English tradition, and he showed how the Americans had worked upon it. If the Americans could get inspiration from English work, why could not the architects of this country work upon those lines too? Men like Gibbs, Kent, and John Wood, of Bath, understood architecture as needed for the climate of this country. In a cosmopolitan ideal they might lose all national character. He (Mr. Stratton) looked for a future based upon their own tradition, upon those architects of the past whose work contained a great deal of inspiration for the future.

Mr. Ronald P. Jones regretted the lecturer had left one gap in his mention of inspiring buildings, and that was the Palais de Justice at Brussels. That building might be, perhaps, a little theatrical; but it stood absolutely unrivalled. In America the wonderful development of civic architecture seems to have been just as much a response to a public demand as to the spread of scholarly design. Over there an entirely different feeling towards architecture existed. For instance, *laymen who have no architectural training at all read the professional papers.* Architecture, in fact, was one of the subjects of public interest. One could not imagine the shareholders of an English railway consenting to the erection of such wonderful stations as the Pennsylvania Station and Grand Central Station in New York, or the Union Station in Washington. The latter was pure architectural display, being quite useless as a means of despatching people by the trains which run below it. But the citizens were just as proud of it as they had a right to be. The first thing expected of anyone who goes to New York is a visit to the Pennsylvania Station. Such an attitude was something we of this country can have no conception of. But it had every bit as much to do with fine architecture as the culture of a McKim. Until we here can get the same thing we can only go half the distance.

Mr. H. Austen Hall (President), in putting the vote of thanks, heartily agreed with Mr. Richardson's distinction between a loose architectural individuality and the trained one. Sir J. J. Burnet had spoken of the necessity for architects applying a cultured mind to the problems of to-day. Later Mr. Ronald P. Jones had told them it was a cultured public they most required. The object of the Architectural Association was to provide the cultured mind and the trained mind to the student: if they could also influence the public they would congratulate themselves, but they had hardly begun to think of that aspect yet. Mr. Richardson felt a tremendous enthusiasm for all that was fine in architecture, and Mr. Stratton had been hardly fair in confining him to one period. In his personality he was far beyond his writings.

The vote of thanks was then carried by acclamation.

Mr. A. E. Richardson, in briefly replying to the discussion, said the English character was so strong there was no danger of its being lost under the tide of cosmopolitanism—rather it would gain from each wave.

The lecturer concluded by showing a few slides of work done at the A.A. schools as illustrating the remarkable progress under the leadership of Mr. Atkinson.

HASTIÈRE.

By JOHN A. RANDOLPH.

IN one of the recent official reports of the outrages by the Germans in Belgium it was stated that the Curé of Hastière was one of the victims. This would appear to refer to the venerable head of the recently restored Romanesque Abbey* on the west bank of the Meuse, about midway between Dinant and Givet, which had the neighbouring one of Waulsort as a rival, and, for a time, a sharer in property and rule.

Whether the interesting old church suffered at the hands of the Germans is not stated, but it is not unlikely. Hastière Abbey was founded in the ninth century by Wigeric, father of Adalberon, Bishop of Metz; the nave of the church was not begun, however, till 1033, and took two years to construct, the choir dating from 1263.

Jointly with Waulsort Abbey, whose lands were surrounded by those of the Hastière house, it had a troublous

* The new high altar was consecrated by the Bishop of Namur in 1912.

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existence. At first it was in the Metz diocese, but came under that of the Prince-Bishops of Liège in the thirteenth century.

agreements arose between the two houses, and in 1208 a decision was made that thenceforth Hastière should have its own seal and special chapter meetings, that novices



HASTIERE-par-delà.—INTERIOR OF NAVE OF BENEDICTINE ABBEY.

Already in 968 Othon I., surnamed "The Great," ordered that the two Abbeys should be united under one Abbot. Seven years and ten months later the Pope announced the completion of the arrangement.



KING DAVID AND OTHER MUSICIANS, FROM THE PSALTER OF HASTIÈRE.

Abbot Rodolphe, in 1033, began rebuilding the basilica, but preserved the crypt of the original chapel.

At the beginning of the thirteenth century further dis-

should make their clerical and literary studies there, and all the principal festivals of the year, Easter alone excepted, should be celebrated there. One prelate alone was to preside over the two Abbeys, under the title of Abbot of Waulsort, in whose monastery his election was to take place, but the two communities were to have equal voting powers.

In October 1568, at the orders of the Seigneur de Genlis, a band of French Calvinists attacked the Abbey, and, entering, slew the Sacristan, drove out the monks, broke up the altars and their consecrated stones, and destroyed the monastic buildings, but spared the church. Abbot Placide, a few years before, after the sacking of Waulsort, repaired the tottering remains of that Abbey's church, regardless of the style of the original.

The last Abbot was Grégoire Thibaut, elected in 1773, and the monks assisted at the dispersal of their patrimony.

In 1793 the French Revolutionaries, under Delecolle, Mayor of Givet, fired the church of Hastière, the ruins serving thereafter as a barn, a bark depôt, and finally a smithy.

The restorations began soon after 1826, in which year the Commune had bought the old choir and fitted it up for services. Later on in the year the remainder of the ruins were purchased.

The restorations were apparently not on a great scale, probably owing to most of the available funds having been spent on the purchase of the fabric.

In 1880 a more complete restoration scheme was devised, but not brought to a conclusion, and in 1885 Mr. Van Assche, of Ghent, the architect of the St. Nicolas and Dixmude Town Halls and the restorer of the Pamele Church at Audenaerde took up the work and finished it.

During the progress of the reconstruction the old crypt of the original chapel, with stone seat nearly all round it, was discovered and put into repair.

Hastière Church, as the illustrations show, was very similar to those of Lobbes, Nivelles, and Soignies, but on a smaller scale.

Among the treasures of the Abbey are some very beautiful illuminated psalters and other church books, one of the pages of which we reproduce.

The seal dates from the thirteenth century and shows the Blessed Virgin, seated, crowned and with a nimbus, her left hand on the shoulder of the Divine Infant. The inscription is S. CONVENTVS : ECCLESIE : BEATE : MARIE : HASTERIENS.

WAULSORT.

As for Waulsort, which is stated to have been founded by Count Gilbert, Lord of Florennes, and the charter of con-

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firmation given by Otho in October 946, it was first tenanted by Benedictines from Scotland and greatly developed, being well known in the fields of literature, science, and art, but flourishing especially under Abbot Widric and his successor (1102-42).

There was a church-jewellery school there from the tenth to the thirteenth century. The Namur Museum had two reliquaries of the Abbey from the Revolution onwards, and in the British Museum, since 1837, is a "History of the Chaste Susannah" in rock crystal.

The remains, after the Revolution, were turned into a country house, the Abbot's quarters, with a turret at each end, being of the seventeenth century. The house stands close to the banks of the Meuse. The site of the Gothic church has been entirely obliterated.

The seal was very similar to that of Hastière, but the Blessed Virgin is represented as handing some object to the Divine Infant. The inscription runs: ✠ BEATE: MARIE: CAPITVLI: VALCIODO.

The small parish church of Waulsort shows traces, on the south side, of blocked-up Romanesque arches, as if there had formerly been an aisle there. Its little steeple is very similar to the ones to be found in the smaller village churches of Surrey.

ROYAL ACADEMY LECTURES: ARCHITECTURE.—II.

THE second of Professor E. S. Prior's four lectures at the Royal Academy was delivered on Wednesday, the 17th inst. In the first, which was reported in our issue of last week, the lecturer introduced his subject of "The Thousand Years of the Flemish Arts" by dealing with the Romanesque and Gothic periods of the Low Countries down to the fourteenth century. The second lecture had for its title

THE FLEMISH RENAISSANCE OF ARCHITECTURE.

In the fourteenth and fifteenth centuries, while Italy was working out its classic Renaissance and making schools of architecture, sculpture and painting, founded on *classic* learning, Flemish sculpture and painting were creating a new Gothic expression of the arts that had a permanence in Northern Europe for another two hundred years.

In his previous lecture Professor Prior suggested that some of the forms and some of the expressions of this Flemish school had their origin in the English development of architectural church style, which we call "Decorated." But he also pointed out that the intrinsic character of the Flemish art was to be found in its own conditions, particularly in the commercial development of the great Flemish towns: Bruges and Ypres in the fourteenth and fifteenth centuries, in the sixteenth Ghent and Antwerp. They were for the later Middle Ages the great manufacturing cities of Europe. For a hundred years Antwerp was the capital city of the world's civilisation, the centre of finance, the home of intellectual progress, the nursery of the arts. Its arts were eminently those of a mercantile community—the arts of corporations of traders, the products of craft guilds, who were monopolists in the possession of art secrets and traders in their beautiful wares.

In the thirteenth century Flemish art had been French—French of the Ile de France—and therefore conditioned by quite another set of influences. The architectural bias still controlled the run of sculpture in France, so that in the fourteenth century all the expressions of image and relief, although they had acquired naturalism, were still ideal. That is to say, French sculpture based representation on universal types. Flemish art was about to turn in the opposite direction. It was to particularise character, and seek effect in the vividness of individual representation, not in the ideality of natural beauty. By the end of the fourteenth century a great revolution had taken place in the ideal of sculpture, due to the new inspiration to artistic effort which appeared all over Europe. Almost contemporary with this came the discovery of oil painting, and the possibilities of using oblong wood panels for pictures.

The style of rich decorative intention which grew up out out of the Belgian prosperity transformed architecture itself. It was the "arts and crafts" architecture which determined what Professor Prior called the furniture phase of fifteenth and sixteenth-century style, not only in Flanders, but in West Europe generally. The frippery of this architectural ornament was borrowed from English style.

In Flanders the conditions as to material available for building were similar to those in our Eastern counties and London, inasmuch as stone had to be imported by water carriage. It came in small pieces, and was reserved for facings and dressings, the body of the walls being in another material. The great cities of Flanders owe their architectural quality to this use of small materials. From early in the thirteenth century brick became the chief building material. Moreover the nearest available stone, that of Tournai, was most of it of hard close grain—blue in tone. The fact of these natural decorative colours—the brown-red of brick and the blue-grey of stone—came to be early recognised in Flemish building. Bronze and oak, marbles black and white and red, were used as rich effects against the ground of the brick and stone, which in most instances was still painted, as in Notre-Dame, Bruges.

Externally the brick and the thin bedding of imported stone made the basic fact of artistic effect. The multitudinous touches of colour, the myriad network of jointings, weave over Flemish work a texture of tinted haze which is that of an autumn wood. The towers and spires of the Flemish cities particularly developed externally those qualities of intricate texture and varied colouring, and contrasts of picturesque forms.

If one may sum up in a single word the essential quality of this period of the Flemish art of architecture one might make the word "picturesqueness" serve the purpose. Its effects are those of texture, of varied hazy, undefined suggestiveness, broken colour, moving brilliance, vibrating sensitiveness. They are not of definite line, or severe logic—the intellectual perfection that belonged to the Greek singleness of spirit, or to the French singleness of constructional purpose.

This picturesque "arts and crafts" architecture of the Low Countries was essentially the art of cities; by its commercial basis for one thing, as that of exporters of artistic furniture—by its material conditions, again, as those of artistic populations who worked up costly materials, with the skill and artifice of established guilds of crafts; and, thirdly, as an art of exterior communistic display and civic magnificence. It expended itself in the great public buildings of a city: the Hôtel de Ville is the characteristic building of Belgium. The clock tower, from which the bells struck that gave the hours to the citizens and called them to assembling, was the especial symbol of civic freedom.

Now, it was in this architecture of citizens that the great change of style which we are accustomed to associate with the sixteenth century occurred.

To us who design imitative architecture the essence of the change lay in the appearance of classic ornaments—entablature, pilasters, pediments, and nude sculpture—in place of arches, traceries, tabernacles, and draped figures on the surfaces of building. Our modern view is that architecture depends upon these stylistic attributes to be architecture at all. Plain building is building, not architecture. But this was not the view of the Renaissance architect—for now from mason-decorators we come to the title of architects. To them plain building did not cease to be any the less fine architecture. On the contrary, there appears in the early Renaissance of Northern Europe, in France, in England, and especially in the Low Countries, an admirable style of building which is fine architecture by virtue of its building sense, since it was definitely constructed to meet conditions of necessity.

As civil building took the place of ecclesiastical building, architecture as an art began recreating its expressions. The first necessity of an architecture, not of caverned halls but of civic rooms, was flat ceilings, because floors were required over, and flat ceilings meant at once the expediency of level-headed windows, fitted with square-angled casements. The arch was impractical for ceilings, and for openings too, directly there was storied building. So the building artist began to find architecture not in mere ornament, but in the facts of building behind it. Gothic ornament became superfluous, and was cast away as faded, wornout finery. It was the discovery of the personal artist as a cultivated designer that established the Renaissance in the North of Europe. Moreover, the ornaments of classical style became necessary, not because builders had undergone conversion, had renounced an ancient paganism and found salvation in a new creed of art, but because in the common-sense of building the Gothic shapes had become an encumbrance, being now difficult to fit to the conveniences and necessities.

The power of the Italian culture of the arts lay essentially in its discipline; it had accepted form and training as the mental equipment of ancient style, and the revival of the Renaissance was a return to the ancient order of Roman civilisation. Decoration in the Gothic schools of architecture had for long proceeded on the principle of a happy-go-

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lucky performance; but the humanist, as the apostle of intellectual reform, analysed, selected and arranged.

Renaissance style developed as the principle of selection by emphasis, of getting interests by contrast of line and tone, so as to direct attention to the balance of the composition. It may be considered as on all fours with the artistic perception that developed the art of tones and values in which the Flemish painters excelled.

This discipline of abstract learning did not, however, last, and it passed away in the increasing vogue of the pattern-book. During the sixteenth century there was a constant issue of treatises on architecture, which took the form of designs for builders, and were followed by similar pattern-books of design dealing with furniture, jewellery, &c., which look like pages from an Army and Navy Stores catalogue.

While Gothic ornament and Gothic construction were still universal in actual building, compositions of Renaissance architecture had found their way, following Italian examples, into subject pictures, and into relief sculpture of sacred legend. Between picture architecture and pageant architecture there was the closest connection. In fact, the celebrated painters and sculptors were continually employed in devising triumphal arches, or in the composition of scenery for masques and pageants. Temporary erections of considerable elevation were constantly in creation. These were confections, not building. Decoration runs riot in them, and riot is the only term one can apply to that medley of ornament which, appearing in the pattern-books of architecture, were more or less carried out in building materials. After the trial of every possible motive by the seventeenth-century ornamentalists, architecture drifted into the abstract curves of the Louis Quinze era.

There were, therefore, two currents fighting for the mastery in the Renaissance architecture of the sixteenth and seventeenth centuries.

In thinking of the expressive picturesque architecture of the sixteenth and seventeenth centuries in Flemish cities, it must always be remembered that the traditions of the Middle Ages were still in existence as to workmanship. The crafts were thoroughly taught. In the strict guild discipline craftsmen were compelled by the rules of their Guilds to be craft-artists. If, as in the ancient laws of Guilds, the bad work of craftsmen was burnt nowadays, would there not be, asked Professor Prior, as great a holocaust as that which smokes on the altar of German invasion?

The protracted dominance of Gothic tradition in church-building came to an end in the architecture of the Jesuits, as it is called. In the celebrated example of St. Michael at Louvain we have not merely a decorative surfacing that learned artists and sculptors could compile, nor merely the pageant structure that the sculptor conceived. But we get a reasoned constructive adaptation of classic forms to building necessity. However, in this matter Jesuit architecture was in no sense distinctively Flemish. In such interiors as that at Namur the accessories are Flemish, the design of the fabric is that which is common to Reformed Church architecture, whether to that which is usually called the Protestant, or to its counterpart, that of the counter-Reformation.

ANIMAL FORMS IN ART.*

By CHARLES AITKEN.

FEW people realise how constant through the ages has been the effort on the part of man to capture and fix by means of artistic representation the fleeting motions of the furred and feathered fellow-inhabitants of his globe. The prehistoric reindeer hunters covered their tools and weapons, and even the walls of their cave dwellings, with scratchings of the animals they hunted and lived on. These carvings show an amazing, almost photographic, sureness of vision in catching the quick motions of animals, while they are marked by an instinctive appreciation of animal nature which is rare in any period of art. It is not until the comparatively modern work of Japanese artists that we get any observation of animal nature which rivals theirs in its lighting truth and grace.

The rendering of animal forms among primitive races seems to be prompted by several distinct, though often mingled, reasons. There is the true artist's simple, instinctive pleasure in depicting life, form, and movement. This reason accounts for the Eskimo decoration and the Assyrian wall-carvings. Secondly, we have the vast subject of Totemism, leading to infinite representations of animal forms. Many savage races still believe themselves united by kinship to some animal, which becomes the badge and guardian spirit of their tribe. The use of animals in heraldry is not entirely remote from Totemism; the heraldic crest was the badge of a clan and symbolised a desired spiritual affinity to the characteristics of the animal selected. Lastly, we have the depiction of animals for superstitious or religious reasons.

The Assyrian and Egyptian artists both excelled in representing animals, though in very different fashions. The Assyrian exaggerated the muscles, broadened the forms, and delighted in power and strength, showing chiefly savage beasts fighting with his kings and warriors. The Egyptian, on the other hand, elongated his figures, and gave them elegance and grace; but in his intense conservatism he failed to give the sensation of vitality.

Greek art was primarily interested in the human figure, and the Greek gods had human form. Many excellent representations of animals are found, however, in Greek art, particularly on vases, coins, and metal vessels. But, on the whole, animals play a less important part with them than in the Egyptian art, with which the Greeks were well acquainted.

The Romans used animal forms very largely in their decorative work, and animals are perhaps the most usual motif of their mosaic designs for floors and walls. They also developed a decidedly realistic, almost impressionistic, school of landscape painting, in which animals and such subjects as "Orpheus Taming the Beasts" frequently occur.

Christianity exercised an influence hostile rather than helpful to art, especially in the domain of the representation of animals. The fear of idolatry was always before the early Christians, and they refrained from the sculpture of animals lest such carvings should be worshipped, like the animal gods of the pagan religions which surrounded them on all sides. Nevertheless, as time went on, Christians found it necessary to make use of art in order to spread the new ideas they were preaching. Animals were adopted as symbols. Popular legends, such as that of Orpheus, were followed almost literally. The scholars and theologians, forgetting the sanity of Greek thought, sought in Nature nothing but the material symbols of intricate theological speculations. St. Basil frankly says that it is of less importance whether griffins and unicorns exist than to draw moral example from their supposed habits. A collection of the current stories about animals, real and imaginary, was made at Alexandria by a Greek writer at the end of the seventh century under the title of "The Naturalist." The book was translated into more than twenty languages, including Nubian and English, and throughout the Middle Ages it was the most read book after the Bible. On these collections of stories about beasts and moral reflections on their habits, real or supposed, entitled "Bestiaries," were based the animal carvings and paintings of Gothic art. Almost all animals came to stand as types of good or evil, sometimes of both. Art was long in emerging from these amazing moral and theological analogies, but gradually we find curiosity prompting artists to original observation of animals when opportunity allowed.

In painting it was only comparatively recently that animals came by their own. The idea of painting an animal for its own intrinsic beauty and interest did not occur to men until art was far advanced. The first artist to paint animals with a loving attention was the Veronese, Pisanello. The popularity of equestrian portraits did much to bring animal painting into prominence, yet it was perhaps due to a lesser painter, Jacopo della Ponte, or Bassano, that animals at last came to be regarded as sufficient to form the main interest of a picture, apart from any Biblical, historical, or portrait theme. Delighting in the agricultural life of his native Alps, he initiated the special branch of painting known as "Animal Genre," and he soon found eager followers amongst the Dutch and Flemish artists of the seventeenth century.

The fashion for the portraits of favourite horses and dogs led to the patronage of such painters as Stubbs, Sartorius, and Ben Marshall by the sport-loving squires of the Georgian era in England. Stubbs, moreover, did other services to art, and his book on the "Anatomy of the Horse" became a useful classic. James Ward, in succession to Paul Potter, recognised animals as worthy to form the only interest of a painting, while he gave this branch of art imaginative vigour by selecting savage beasts and showing them in the very heart of Nature away from man. Ward's brother-in-law, George Morland, followed more closely on the lines of

* Abstract of a Lecture delivered last week at Carpenters' Hall.

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the Dutch painters, substituting an English homeliness for a Dutch.

During the Victorian Era, which intervened between the work of Morland and the delicate sympathetic apprehension of Mr. Swan and other recent interpreters of animal nature, many able artists devoted themselves to depicting animals—Sir Edwin Landseer, Ansdell, Bristowe, and Huggins, to mention only a few—but their work reveals at times an ever-glossiness of surface and a want of insight into the truest dignity of animal nature characteristic of the period in which they lived, and it is to the French sculptor, Barye, that we are indebted for a really dignified presentation of animal life in modern art.

LONDON COUNTY COUNCIL.

GENERAL POWERS BILL, 1915.

THE London County Council this week decided not to proceed further with the proposals contained in Parts III. and IV. of its General Powers Bill, 1915.

Part III. dealt with the erection or rebuilding of houses after the passing of the Act in such manner as to prevent flooding of the premises, consequent on back-flow of sewage from drains. Part IV. in general provided that it should be illegal to build upon land the surface of which was below the level of 5 feet 6 inches above Trinity high-water mark, or which was so situated that efficient drainage by gravitation was impossible.

The reason given for not proceeding with these parts of the Bill was that opposition by the Borough Councils was very strong, and that the Premier had expressed unwillingness to give facilities to Bills of a contentious nature during the present crisis.

STATUARY IN LONDON.

An offer by the committee of Lloyds to present to the Council a marble statue of the late Right Hon. William Huskisson, by Gibson, was responsible for an interesting, and at times amusing, discussion on the educative and artistic value of statuary in London. Mr. Huskisson, it may be recalled, was at one time a prominent political figure, and, among other official appointments, held successively the offices of Secretary to the Treasury, Chief Commissioner of Woods and Forests, and Secretary of State for the Colonies.

Sir George Goldie, who objected to the committee's proposal to erect the statue in Pimlico Garden, said that if there was one thing more than another lacking in London it was verdure, and he would not personally consent to the sacrifice of a single blade of grass for the erection of statuary. His opinion was borne out by the fact that, when architects and sculptors tried to improve St. James's Park, there was a great public outcry, and it was said the park would be ruined by their interference.

Sir John Benn ventured the opinion that a thing rarer in London even than verdure was artistic statuary, and he envied some of the Continental cities with their beautiful statuesque adornments. With the contention that London should not be defaced by anything ugly he agreed entirely, but it not infrequently happened that a statue was worthy of a place of honour, purely on the score of artistic merit, and irrespective of the identity of the person represented. He suggested that the Council should take the opinion of some high authority on Art, such as Sir Aston Webb, on the merits of the statue which had been offered to them. It would be a mistake, in the interests of art, to reject the offer without first examining whether the quality of the work entitled it to publicity, apart from the historical value of the monument.

Mr. Andrew Taylor, himself an architect, expressed the opinion that the statue in question was unquestionably a work of art, and worthy of a public position. He reminded the Council that the sculptor, Mr. John Gibson, was a distinguished Royal Academician who had spent most of his life in Rome, and that at Burlington House there was a Gibson Gallery. This was one of the best examples of Mr. Gibson's work, and although apparently certain members of the Council would like to throw a blanket over all statues of Venus, or other figures in the nude, this particular statue was perfectly respectable.

Mr. Hutchinson, who earlier in the discussion had moved the reference back of the committee's recommendation, explained that, if he had his way, he would take down all statues in London, because they were all equally bad.

Mr. Taylor, continuing, contended that such statues did much to familiarise the man in the street with the history of his country, and some neighbourhoods in the Metropolis were so drab and squalid that anything which added to the artistic appearance of the streets was an advantage. The public gardens on the Continent—the Luxemburg Gardens, for instance—derived much of their beauty from the presence of groups of sculpture.

Mr. Bernard Holland facetiously expressed some doubt as to whether the sight of the statue would inspire the street arab and costermonger to inquire into the history of the gentleman represented. (Laughter.) On the question of artistic merit, he did not much admire Roman statues, though the statue of James II. outside Westminster Abbey was a handsome work of art. For himself, he would prefer to see in London more statues of naked nymphs and goddesses—(laughter)—and in any case it was a mistake to mix up history with art.

Mr. Cotton suggested that, if there were any anxiety to adorn London with statuary, a pilgrimage might be made to the Paris Salon, and an appropriate selection made from the many excellent examples of the sculptor's art there exhibited. (Laughter.)

The recommendation of the committee to accept the statue was ultimately agreed to.

ATTENDANCE ON SUB-CONTRACTORS.

THE Council of the Surveyors' Institution in a letter to the Council of the Society of Architects, covering a memorandum on this subject, stated that a deputation from the Institute of Builders, received by the Quantity Surveyors' Committee of the Institution, drew special attention to the obstacle against accurate estimating imposed by the practice of leaving, in bills of quantities, the cutting away and attendance on sub-contractors to be priced in a lump sum by the principal contractor. In modern buildings the hot-water work, sanitary work, and electric wiring is usually considerable, often indeed very extensive; and this class of work, too, is frequently delayed until the building is in an advanced stage, necessitating a good deal of work which might be avoided were the requirements known earlier.

Accurate estimating is to the advantage equally of the building owner and of the contractor, and the Council of the Surveyors' Institution feel sure that anything which can be done to secure an improvement in that respect will receive the ready support of architects.

The Quantity Surveyors' Committee are satisfied that the builders are not without some ground for complaint, and that the importance of dealing in adequate detail with "attendances" is not fully realised by all who practise as quantity surveyors.

They are of opinion that the matter should be dealt with more precisely than is frequently the case in preparing bills of quantities, in order to obviate the friction which often arises between the parties to a contract owing to a misunderstanding as to the liabilities imposed respectively upon the building owner, the general contractor, and the sub-contractor. The following notes and suggestions are therefore recommended for the consideration of members of the Institution.

The word "attendance" does not comprise any works of construction (*e.g.*, pipe trenches, castings, &c.), but it does comprise all cutting away and making good after, receiving materials and providing storage space for them, providing water, allowing the use of erected scaffolding and fixed plant. If so provided in the contract it should also be taken to cover the payment of accounts as certified by the architect, before their inclusion in the general certificates.

The particular matters dealt with by the builders' deputation were: (1) Attendance on heating engineers, (2) attendance upon hot-water engineers, (3) attendance upon electricians.

In dealing with attendance on these or other special tradesmen, there should be given an account, as detailed, clear and succinct as possible, of the work which it is proposed the sub-contractor shall do, stating precisely what services will have to be rendered to him.

When the sub-contract is of minor importance, all the needs of the case will be met by leaving the estimator, after inspecting the drawings, to assess the value of the work to be done in this connection and set it down against the descriptive item.

When the sub-contract is important, the same account of the work to be done should be given, and, in addition, an indication of the extent of the attendance, stating: (*a*) The number of holes for pipes, &c.; (*b*) the number of pipe

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brackets, &c., to be fixed; (*c*) the chases for pipes, &c.; (*d*) the number of the points for electric lighting, electric bells, radiators, sanitary fittings, &c.

A general item to the following effect should also be inserted:—

"In so far as is possible an indication has been given of the specific attendance required, but the contractor is to allow here for any further expense entailed in waiting upon special tradesmen, or for the disturbance of his work caused by them, and for giving them all facilities for the execution of their work."

Care should be taken that the nature of the attendance which will be afforded them is clearly set out in the sub-contractors' contracts.

It is considered inadvisable in ordinary circumstances to make money provisions to be expended in "day-work."

The Council of the Society after careful consideration of the memorandum found themselves able to approve in principle the recommendations of the Surveyors' Institution, but made suggestions for alterations in detail more particularly in regard to descriptive items, summarised in the cases of sub-contracts of minor importance, and set out in full on works of importance.

They also suggested the following additional clause:—

The words "attended upon" or "attendance" do not comprise any works of construction (*e.g.*, pipe trenches, castings, &c.), but they do comprise all cutting away and making good after receiving materials and providing storage space for them, providing water, and allowing the use of erected scaffolding and fixed plant. Where the sub-contractor does not allow in his tender for any special scaffolding that may be required in connection with his work, the general contractor must provide it. The words "attend upon" or "attendance" must also be taken (if so provided in the contract) to cover the payment of accounts as certified by the architect, before their inclusion in the general contractor's certificates.

The Council of the Surveyors' Institution agreed that the verbal alteration suggested would be an improvement. But with respect to the provision of special scaffolding they considered that this could not be taken as included in the general term "attendance," and should be the subject of a separate item.

On further consideration the Council of the Society agreed to this, and subsequently the Council of the Surveyors' Institution in thanking the Council of the Society for the interest they had shown in the matter, intimated that their committee would take advantage of the suggestion made by the Society when re-issuing the circular on attendances on sub-contractors.

Meanwhile, they express a hope that the members of the Society of Architects may support the quantity surveyors in carrying out the principles embodied in the memorandum.

ILLUMINATING ENGINEERING SOCIETY.

A MEETING of the above Society was held at the House of the Royal Society of Arts on the 16th inst., when a paper by Mr. F. W. Thorpe was read and discussed dealing with the Development and Design of Lighting Fixtures in Relation to Architecture and Interior Decoration. From the paper we take the following extracts:—Modern architects and designers often excel in one style only, showing considerable skill and individuality in associating old forms and details with modern requirements. In the latter part of this paper some general problems applying to fixture design as a whole are dealt with, and instances mentioned in which the co-operation of the architect, the fixture designer, and the illuminating engineer is required. The fixtures designed in old and historic styles were intended to carry candles and oil lamps; but those of the present day, besides carrying the lamps, have also to provide access for the "fuel"—*i.e.*, provision must be made for the working into the design of tubes conveying gas or electric wires. This alone, apart from the difference in the illuminant itself, has naturally had a material influence on the design of modern fixtures.

THE INFLUENCE OF EARLY LAMPS ON MODERN FIXTURES.

As artificial light became general with the advance of illuminants, the importance of the lighting fixture as a decorative object was recognised, culminating in the candelabra produced during the Italian Renaissance and the seventeenth and eighteenth century French periods, now models for most countries, and which many people consider have not since been excelled. As new illuminants appeared the nature of these fixtures was influenced, yet in many cases the original forms were retained. When twentieth-century illuminants are used the question must, however, arise whether some of these old models can be properly adapted to the new conditions. The simple "boat lamp" of the ancients, and also the crusie, rush, and tinder-holder were subordinate to other articles of furniture, for we may safely assume that in these days artificial light was avoided when possible, and therefore the fixture did not receive the attention or occupy such an important position as the lighting fixture of to-day. Yet, whereas the antique lamp often surpasses the modern lamp in its artistic qualities, it was invariably defective from a purely utilitarian standpoint; the modern fixture, on the other hand, although more efficient, seldom reaches the antique standard of beauty. The shape of the antique boat lamp was revised during the time of the Renaissance, again during the French Empire period, and is being revived once more in harmony with the prevailing style of Neo-Greek architecture.

LIGHTING FIXTURES BASED ON ARCHITECTURAL AND DECORATIVE PERIODS.

The design of the lighting fixture has always been contingent upon architecture and decoration for their form and detail of ornament. The Romans were luxurious in the furnishing of their homes, and bronze candelabra were amongst the finest objects of furniture. The slender bronze models, of which a few shapes seem to have become standardised and made in great numbers, were mostly for domestic lighting, being made, like the modern electric standard, in two sizes for use on the table and the floor. The large marble candelabra were for religious and State ceremonial purposes. The bronze models invariably had a flat capital upon which the boat lamp was stood. In some cases the stand terminated in a spike or projecting arms from which lamps were suspended. All these models afford excellent material on which to base modern designs, and their frequent use by architects of the present day is justified by their beauty of design and proportion.

Reproductions of candelabra designed and produced by craftsmen of the past are often adapted with a rigorous conservatism to modern requirements, their importance and correctness in the decorative scheme often out-weighing their practical utility as a lighting appliance.

ECCLESIASTICAL FIXTURES.

It has been remarked that the candelabra mentioned above, besides being important objects in the home, played a part in the religious ceremonial of the ancients, as it does in many of the cathedrals and churches of the present day.

In the modern lighting of places of worship to-day we must uphold conservative treatment, remembering the importance of tradition in Ecclesiastical Art. Forms, sometimes symbolic, have been in use for centuries. The various styles of church architecture have all given rise to characteristic types of lighting fixtures of remarkable beauty of design and craftsmanship.

Churches are designed on traditional lines, and embody the individuality of the architect. Modern improvements, such as lighting fixtures, should form an essential part of the scheme, and must be in harmony.

During the Italian Renaissance the candelabra were revived along with the tradition of antique art; old forms were adapted to changed ideas. From this time onwards candelabra appear in many different types and made in various materials, the finest examples of which are to be found in the churches of Italy. On these models the majority of modern church candelabra are based.

The architects of the Renaissance made full use of the lighting fixture in the embellishment of the exterior and interior of the churches and palaces of Italy. The lantern bracket outside the Strozzie Palace at Florence surely adds interest to the building.

FIXTURES FOR DOMESTIC LIGHTING.

Except in the mansions of the great the progress of illumination in the homes of the middle ages was comparatively slow, just as the methods of illumination were extremely primitive. But from Tudor times onward, although means of illumination were still limited, there was constant change in the type and style of the lighting fixtures.

The iron rush and candle holders used in England in domestic farm and cottage lighting of this date include many ingenious contrivances, some possessing distinct artistic merit.

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PHOTOGRAPH BY THOMAS LEWIS, LTD., BIRMINGHAM.

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HOUSE AT FENHAM, NEWCASTLE-ON-TYNE: THE DINING ROOM.

Mr. MARCUS K GLASS, Architect.

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HOUSE AT FENHAM, NEWCASTLE-ON-TYNE: THE GARDEN FRONT

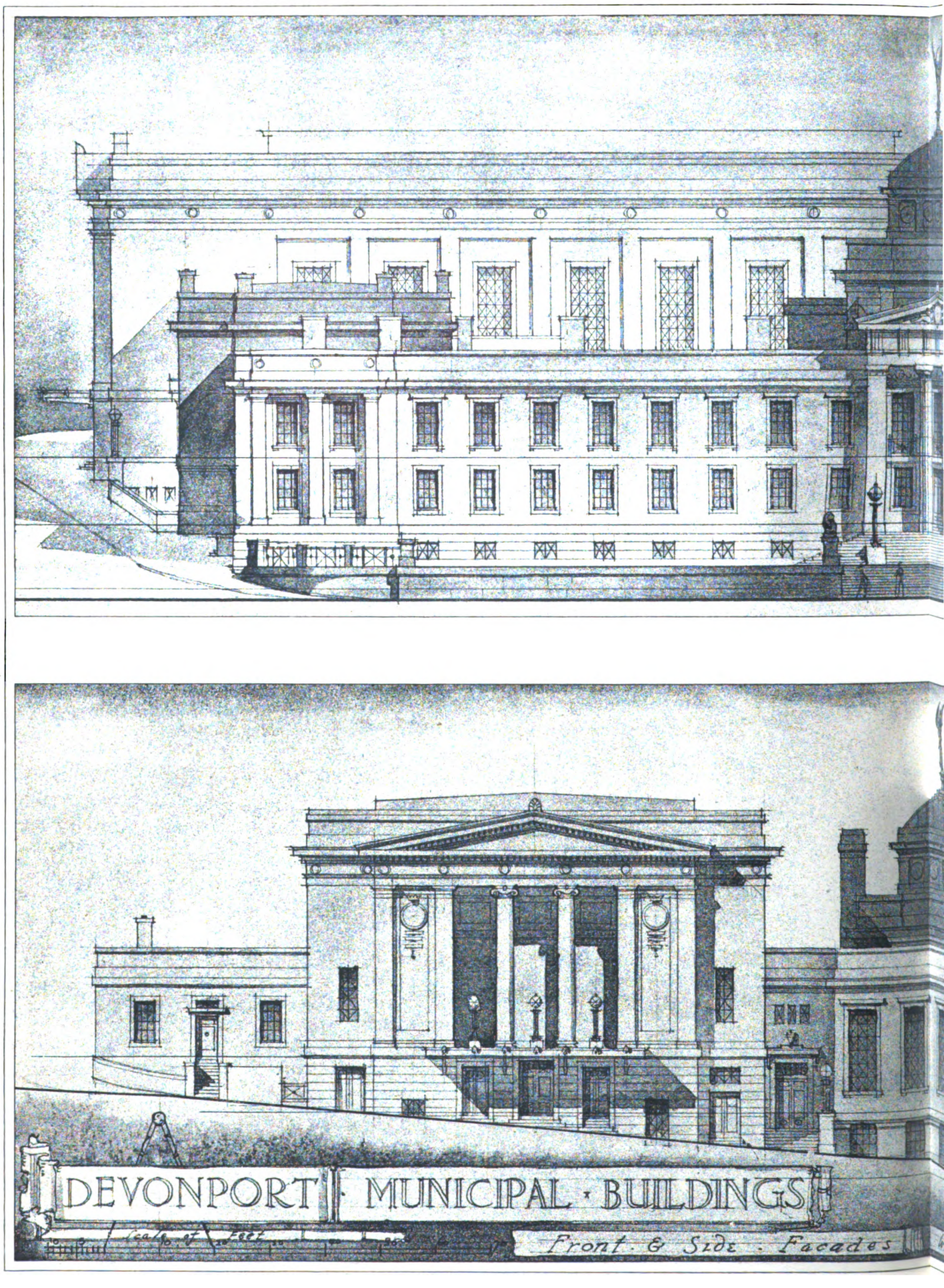
MR. MARCUS K. GLASS, Architect.

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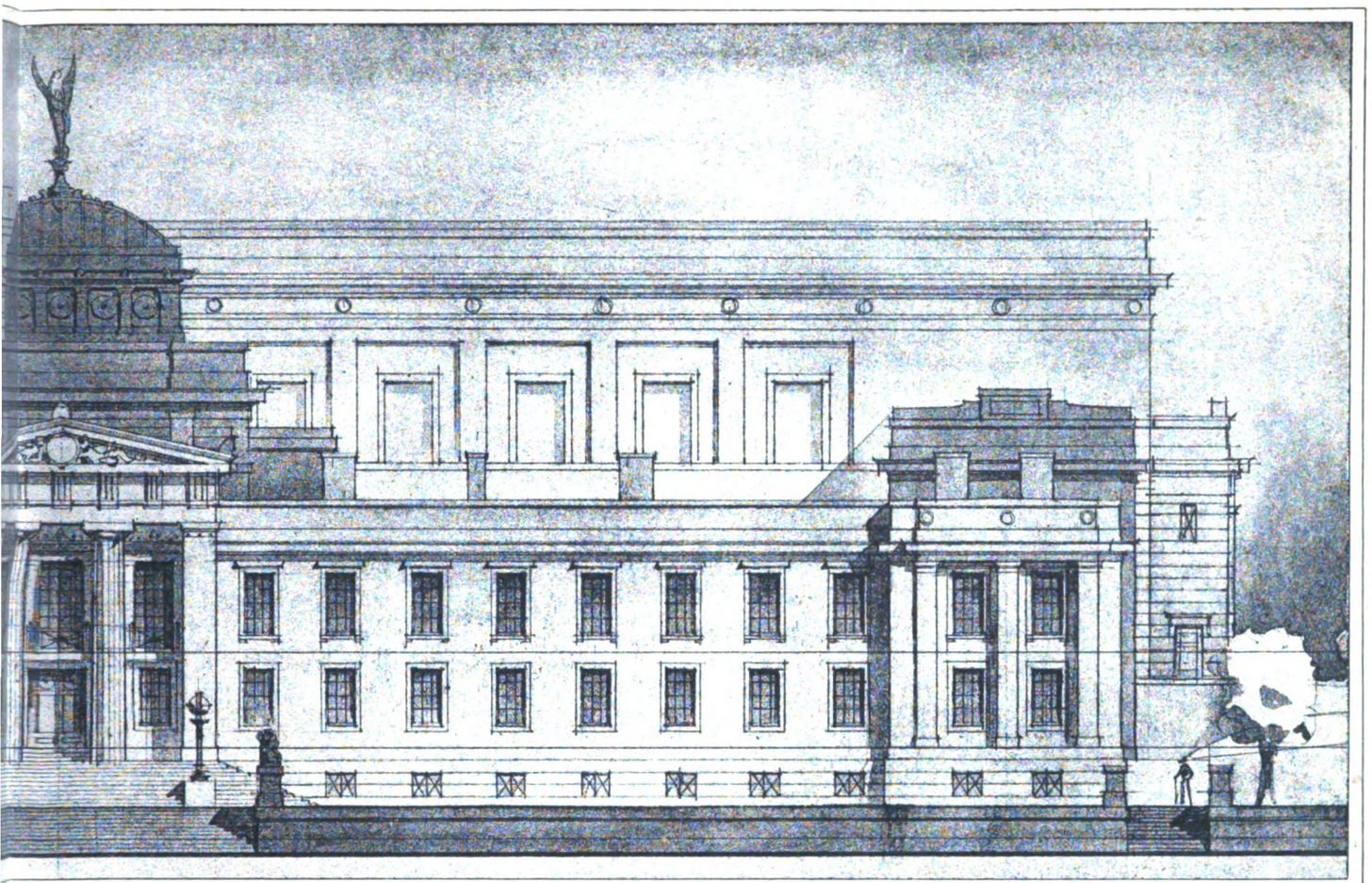


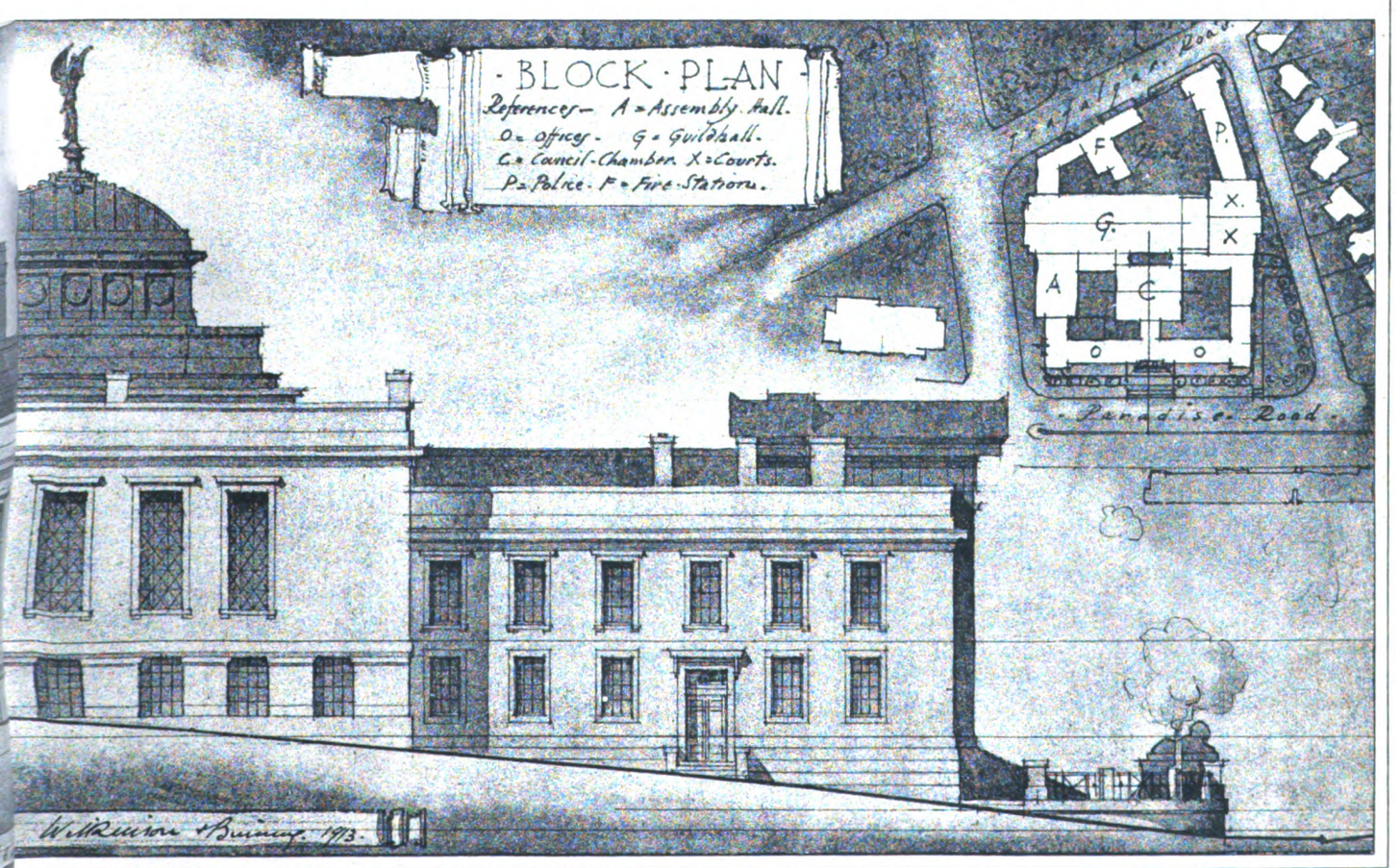
(Royal Academy Exhibition, 1914.)

COMPETITION DESIGN BY Messrs

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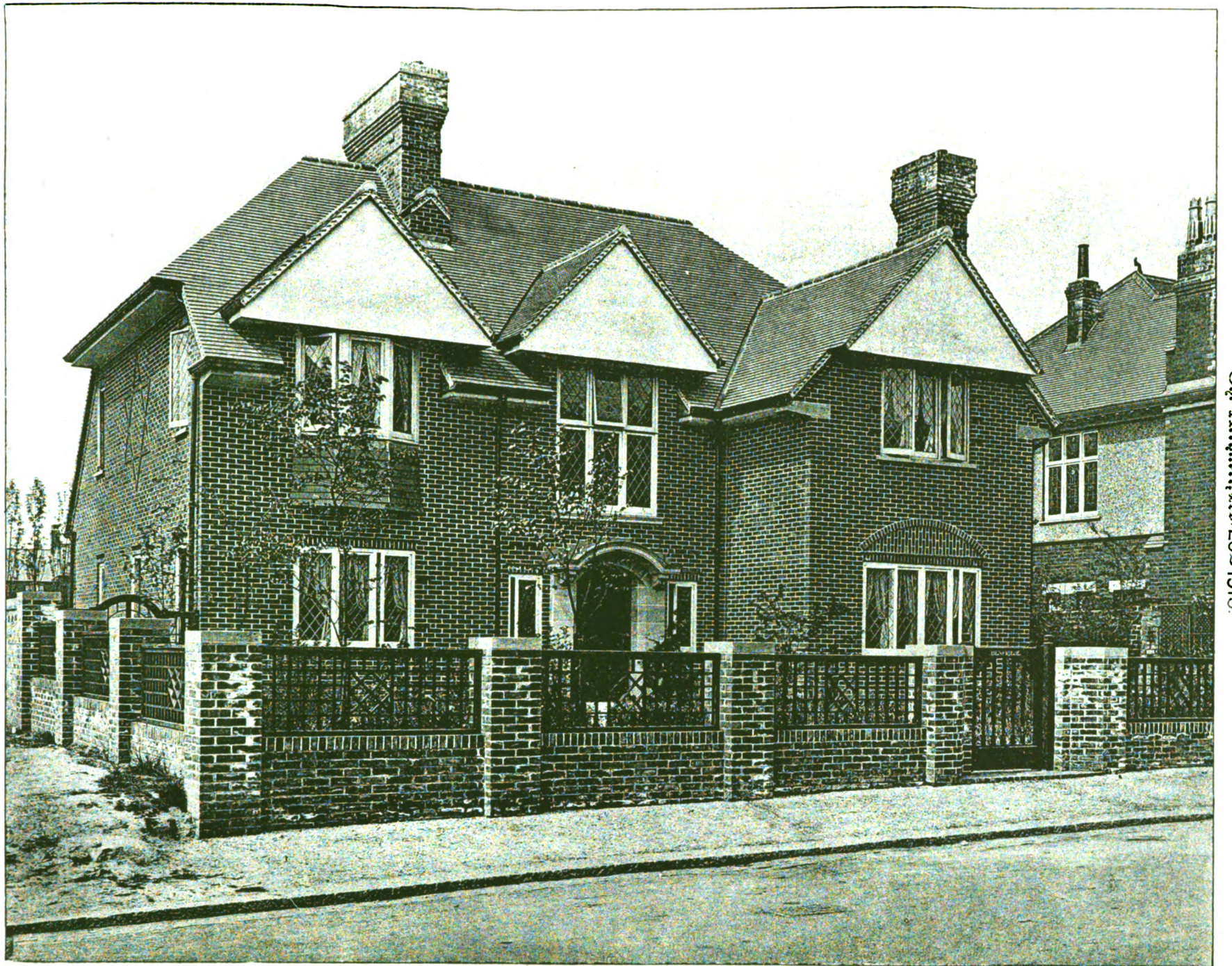


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HOUSE AT FENHAM, NEWCASTLE-ON-TYNE. THE FRONT ELEVATION.

Mr. MARCUS K. GLASS, Architect.

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INK-PHOTO SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W

HOUSE AT FENHAM, NEWCASTLE-ON-TYNE: THE HALL.

Mr. MARCUS K. GLASS, Architect.

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Architects and designers in endeavouring to preserve in their reproductions of various rooms the correct atmosphere of the period require to be correct in regard to the gas or electric light fixture quite as much as in other details of furniture. Hence, if a room is to have the correct Early English atmosphere it is necessary to adhere to the correct old forms. This atmosphere is, after all, only obtained in the decoration; the fixtures are added to and regarded as furniture, and are primarily of æsthetic value owing to their shape and the colour-harmonies they make possible. Because the illuminant is modern the resultant effect, with due consideration, need not be incongruous. In a modern room possessing decorative qualities, if it is not the aim of the owner to be correct in detail, any type of lighting fixture can be employed so long as it is in good taste.

In Mid-Tudor and Stuart times the close connection between the English and Dutch Courts was the means of introducing new ideas into furniture, which depended upon colour as well as form for effect. This, again, had its effect upon the accessory arts, and is noteworthy as leading to the introduction of the Flemish candelabra, perhaps the most popular of all lighting fixtures at the present day.

From this sprang the classic revival in furniture and interior decoration in England and France. Chippendale, Adam, Sheraton, and Hepplewhite were designing furniture each in their distinctive styles with which we are familiar, and their contemporaries in France were moulding the Louis XIV., XV., XVI., and Empire styles for which the French are so famous, and which were destined to influence the decorative art of the whole world.

In the remainder of the paper some of the problems that are of interest to architects, fixture designers, and lighting engineers of the present day are discussed.

Various Phases of Interior Lighting.

A broad distinction may be drawn between domestic and public lighting. In the former individuality can be shown in the selection of fixtures, and the purchaser is free to follow his personal desires. In the case of public lighting (by which not only the lighting of the streets, but of halls and rooms, belonging to or habitually used by the public may be understood) novelty in design or system is not desirable, an efficient lighting scheme, supported by fixtures well adapted to the architecture, is the chief requirement.

It is difficult to lay down definite rules as to the method of lighting best adapted for various rooms, every architect will have a different idea, and lighting requirements vary so much with the nature of the building, both in the amount of illumination and the effect desired. Care must be taken in the selection of the system, for we consider the relative efficiency of the direct, semi-indirect, and indirect principles, but often forget their relative decorative values. The fixture should be considered in effect as well as efficiency. Generally speaking, a ball room demands an effect of gaiety, a dining room comfort, and a library an air of repose—all of which conditions may be secured by the judicious selection of fixtures, strength of illumination, and use of colour. Certain general requirements should be fulfilled, whether we are dealing with an old interior or a modern room. One of the most important of these is the choice of appropriate glassware or shades to go with the fixture. On entering a room lighted by artificial means the natural tendency is for the eye to travel involuntarily to the brightest object. One not infrequently finds good metal work in combination with unscreened lamps or mantles giving a glaring effect and hard shadows, such as are not desirable from a practical standpoint and are usually out of harmony with the æsthetic claims of the room. Broadly speaking, lighting that is inconvenient to the eye is also inartistic.

The correct shading of artificial illuminants should therefore be considered in connection with fixture design. In some cases it may be said that the best lighting is unobtrusive. There are instances in which the illuminated surroundings constitute the vital point of interest and it is preferable not to have one's mind distracted by speculations as to the origin of the artificial light. But in many other cases the light source may be made an essential part of the scheme of decoration. A fixture equipped with pleasantly shaped and coloured shades adds considerably to the decorative value of the room both by night and day. Fixtures are apt to be considered too exclusively from the standpoint of their appearance in daylight. At night-time, when they fulfil their useful function of illuminating the room, their appearance should also be pleasing. Care must therefore be exercised to ensure that the artificial illuminant does not distract the eye in following the lines of the fixture. One meets many cases in which the great brightness of a lamp placed within a clear glass lantern makes it impossible to see the metal work. One may therefore lay stress on the importance of decorative silk and glassware in the scheme of lighting. There are instances in which the desire to be correct to period makes it impossible to use diffusing globes and bowls now becoming so common, but they certainly have an important rôle to fulfil.

Strictly speaking, the use of an electric lamp or incandescent mantle in an Adam, or Tudor, interior, may be considered an incongruity. But the incongruity is lessened if the modernity of the source can be concealed. Thus electric candles can be used with silk shades, and it is difficult to find a prettier effect. Modern illuminants can be used with antique lanterns if diffusing glass is employed to screen the lamps from view. The white glass bowls used occasionally with Flemish features are admirable in this respect. By such methods various old models, where desirable, can be adapted to the requirements of modern illumination.

(To be concluded.)

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Church Building and the War.

Sir,—During this time of stress and strife the Church plays an important part, but there is yet much to be done; many of her sons have now joined the forces and are stoutly fighting for the country, but what of those left at home to keep alive the commercial interests that must be maintained for those who will be returning to civil life when all is settled?

It has been stated, and rightly too, that building schemes are being held back, and the only reason given is that they are waiting until the war is over; if this lasts for any length of time many of the smaller firms will not be strong enough to stand the strain, and the larger firms will be sadly affected.

On the other hand, there is every reason for pushing forward all works, building and otherwise, because labour and nearly all materials are lower now than they will be when peace again reigns; and many firms are ready to put in low quotations in order to keep things going. It must be borne in mind that some of these firms are keeping open the situations of men who are now in the fighting line. This of itself is reason enough why they should be supported.

One reason more why the Church should give particular attention to this matter now is because her people have turned to the more serious matters of life here and hereafter, as shown by the greater attendances and devotions. Surely this larger interest should favourably affect the problems of expense?—Yours truly, Churchman.

Building Costs after the War. Will they Increase or Decrease?

Sir,—There is a tendency throughout the country amongst private owners, companies, and especially local authorities to postpone building operations until after the war in the hope that the cost of building will then be considerably lower than at the present time. I have recently been discussing the assumption underlying the attitude of the parties mentioned with numerous architects, builders' merchants, and contractors in South Wales, and have been forced to the conclusion that not only is there no likelihood of a reduction taking place on the termination of hostilities, but that an increase is quite probable. The reasons for this conclusion may be stated as follows:

1. Owing to the general insecurity, the tightness of the money market, and the increased cost of materials, an enormous amount of work that had been contemplated before the commencement of the war has not been proceeded with. It is probable that the value of such suspended contracts in the United Kingdom considerably exceeds £100,000,000, and we should probably allow for at least five times this amount for continental suspensions. On the termination of hostilities the bulk of this work will go forward, and the demand for material will be enormous.

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Bristol.—General Hospital; Fine Arts Academy; Royal Hotel; Southmead Poor Law Infirmary; Summerhill and Eastville Council Schools.

Bath.—Pulteney Hotel; Empire Hotel.

Bury.—Brunswick Chapel, Nightingale Hospital.

Birmingham.—Halesowen Grammar School, Wolseley Motor Works, Barnsley Hall Asylum, Bromsgrove.

Broadmoor.—Criminal Lunatic Asylum.

Barnsley.—Workhouse; Infirmary; Baths and 8 Council Schools.

Brighouse.—Clifton Church.

Chester.—Town Hall.

Chadderton.—Town Hall.

Derbyshire.—Darley Dale, St. Elphin School.

Glasgow.—Blythwood Hotel; Masonic Halls, Rutland Crescent; City Bakeries, Ltd.; Salvation Army, Bath Street; Imperial Tobacco Co., Tobago Street; Port Dundas Distilleries; John Miller, Ltd., Printers, 322-334 St. George's Road; Kilmun Seaside Homes.

Leeds.—Town Hall; Municipal Buildings; Pearl Buildings; Market Hotel; Meadow Lane and Marsh Lane Police Stations; Kirkstall Road Baths; Free Libraries; Elcion Chapel; Beeston and Hunslet Wesleyan Chapels; Sion Chapel, Skinner Lane; Small Pox Hospital, Killenbeck.

Liverpool.—"Meccano" Works; Grove Hotel, Wallasey; Mariners' Home; Merchant Taylors' School; Majestic Picturedrome; Synagogue, Princess Road; Tivoli Theatre and Café; Penrhyn Street Council School; Rice Lane Model Council School, Hope Street Technical School, Clarence Street Secondary School.

Manchester and District.—Victoria Hotel, First-class Dining Rooms, Central Station; Lake Hotel, Belle Vue; Kardoman Café, St. Anne's Square; St. Wilfred's Church, Hulm; Nursing Home, Old Trafford; School of Technology; Art School; Geographical Society's Buildings, St. Mary Parsonage; Palatine Buildings; Picturedrome, Pendleton; Whittlebrook Chapel, Walkden; Trafford Arms, Alderley Edge; Axe and Cleaver Hotel, Altrincham; Bridgwater, Eccles; Crown Hotel, Longsight.

Nottingham.—Mikado Café.

Oldham and District.—St. James' Church; Free Library and Art Gallery; Infirmary, Imperial Picture Palace, Reform Club.

St Helens.—Borough Sanatorium, Provident Hospital, and Council Schools.

Sheffield.—St. Jude's Church; Christchurch, Pitsmoor; Sanderson Bros., Newbold; Sword and Bayonet Works; Heeley Picture Palace; Victoria Hospital.

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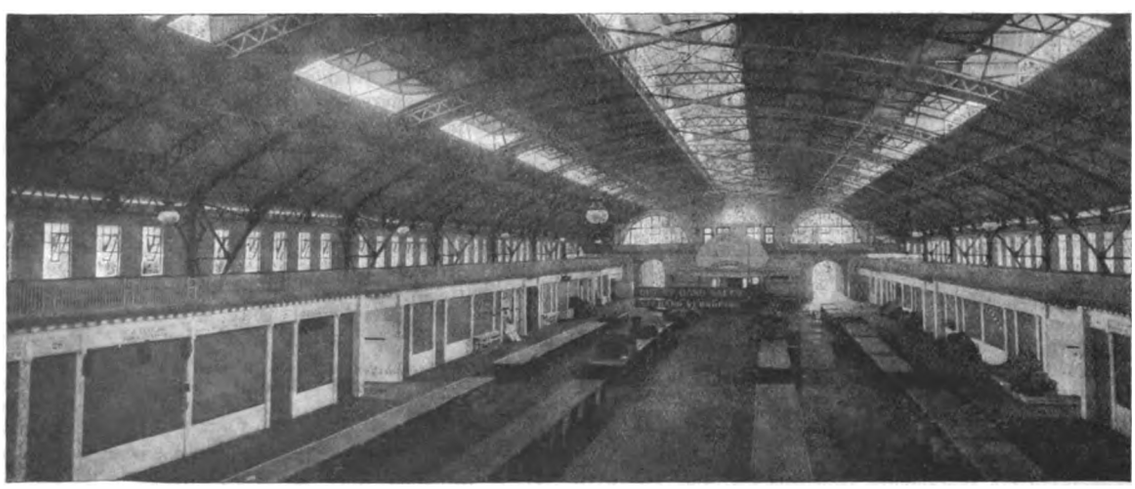
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2. In addition the towns and villages of Belgium, France, and Poland that have been partially or wholly destroyed will need to be rebuilt, and we may safely expect that the huge demand for material thus set up will have a tightening effect on the markets.

3. For many years past the prices of most classes of commodities have advanced very considerably. Since the outbreak of the war the increases have been abnormal, and although reductions are probable when peace is restored it is not likely that prices will return to the pre-war level. It may be assumed, therefore, that the cost of living after the war will be higher than the cost before the war. In that event there will be considerable labour unrest, and wages in the building trade as in other trades must go up. The demands of the building artisans and labourers will, of course, be resisted, but as the labour needs of builders are likely to be great, whereas the volume of available labour will be reduced by the wastage of war, the men are almost certain to have their demands conceded.

4. We are informed that after the war there will be a huge boom in trade. In that event the demand for capital will be great and the rate of interest will be high. If the prices of labour, materials, and money increase, how can we anticipate any considerable reduction in the cost of building?

I have put forward these considerations not in any dogmatic spirit, but in order that they may be examined by men who are thoroughly familiar with conditions in the building trade. Public bodies and building owners generally are usually not in a position to judge the trend of affairs in such a complex industry as building, and I feel sure that they would welcome information as to the future from those who are in a position to speak with authority. Are these people wrong in supposing that there will be a reduction in building costs after the war? If so, a clear pronouncement on the subject would surely be of advantage to the building trade. Perhaps some of your readers would give expression to their views on the subject.—Yours, &c.,

EDGAR L. CHAPPELL, Secretary,
South Wales Garden Cities and
Town-planning Association.

3 Pembroke Terrace, Cardiff.

London Statues.

SIR,—The following extract from the *Daily Telegraph* of February 24 is illuminating with reference to statues in London:—

"Mr. St. John Hutchinson . . . said if he had his way he would have every statue in London taken away. He thought they were all equally bad. . . . Sir George Goldie . . . said he thought any architects or sculptors who ventured into the parks of London ought to be promptly hung."

What fine specimens of legislators! One of them so illiterate as to split his infinitives and to misuse his verbs, and both of them so dead to the claims of differentiation in the artistic quality of our public statues. How can any man whose business takes him to the neighbourhood of Trafalgar Square be blind to the surpassing merits of Le Sueur's "Charles I.," Sir Francis Chantrey's "George IV.," and Hamo Thornycroft's "General C. G. Gordon"? It is true that Sir George Goldie expressed "no objection to statues in the streets, but he hated to see the place of grass in parks and gardens taken up with statues." But is there one of us who would desire (or should desire) the removal of Sir George Frampton's "Peter Pan," or the Lord Holland statue facing Kensington Road? The latter is upon private property; but I venture to include it, as it is only proper to remember that many of the public parks and gardens became public subsequent to the erection of the statuary groups thereon.

I have but specified a few of the very best groups, as the list of good works might be amplified. All I desire of our legislators is to exercise discrimination in their public chatter, and also not to blame architects for work which is not theirs.—Faithfully yours,

PERCY L. MARKS.

February 1915.

IT has been decided that in the present state of France, and in respect that so many artists are at the Front, the usual exhibitions of the Société des Artistes Français and of the Société Nationale des Beaux-Arts will not be held this year.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Gawcott.—Proposed isolation hospital.

CHESHIRE.

Birkenhead.—P.M. Church, Seacombe.

DEVON.

Barnstaple.—Science and Art schools. County architect, Exeter.

Bideford.—Proposed Children's Homes, Handy Cross, for B.G.

Clyst St. Lawrence.—House, Clapp Mill Farm. Mr. E. F. Ware, architect, 18 Bedford Circus, Exeter.

DORSET.

Buckland Newton.—Two cottages and alterations and additions to farm buildings, Brockhampton Green, for the County Council.

Weymouth.—Business premises, Grosvenor Place and St. Andrew's Square: alterations. Mr. S. Jackson, architect, Bridge Chambers.

DURHAM.

Hebburn.—Thirteen houses, Tweed Street, for Palmer's Housing Co., Ltd.

South Moor.—Sixty-eight houses for the Colliery Co. Mr. J. W. Rounthwaite, A.R.I.B.A., architect, 13 Mosley Street, Newcastle-on-Tyne.

ESSEX.

Aveley.—Proposed eight workmen's cottages.

Colchester.—Infectious diseases hospital: extensions and alterations (£4,000).

Rochford.—Sutton Ford Isolation Hospital: proposed extension (£2,000).

Southend-on-Sea.—Police station, cells, &c., Leigh (£1,100), for the Town Council.

HUNTINGDONSHIRE.

Upwood.—Four cottages, for Huntingdon R.D.C.

KENT.

Chatham.—Lunatic asylum: senior assistant M.O.'s house (£1,500).

Crayford.—Three hundred cottages (£70,000), for the Cottage Society, Ltd.

Rochester.—"The Good Intent" beerhouse, Delce Road: rebuilding.

LANCASHIRE.

Accrington.—Cinematograph theatre, Abbey and Peel Streets. Mr. J. Dixon, architect, 22 Abbey Street.

Bacup.—"The New Inn," Rochdale Road: proposed alterations for Messrs. D. Thwaites & Co. (of Blackburn).

Walkden.—Council school, Manchester Road, Linnyshaw. Mr. R. Littler, County architect, 16 Ribblesdale Place, Preston.

LEICESTERSHIRE.

Leicester.—"The Star" inn, Belgrave Gate: rebuilding for Messrs. Brunt, Brucknall & Co., Ltd.

MIDDLESEX.

Harlesden.—St. Mark's Church.

Ruislip.—Elementary school, for Ruislip-Northwood U.D.C.

MONMOUTHSHIRE.

Abercarn.—Fire station (£1,600).

Penyworlod.—County Council school (£7,500). Mr. J. Bain, County education architect, Committee's offices, Newport.

Ynysddu.—Mixed Council school for 350 places. Mr. R. W. Moon, contractor, 1 Park Square, Newport (£5,490).

NORFOLK.

Great Yarmouth.—Isolation hospital: extensions (£1,350).

Smallburgh.—Workhouse: alterations.

NORTHAMPTONSHIRE.

Brackley.—Council school. Mr. W. Heap, contractor, Lea Road, Northampton (£2,856).

SHROPSHIRE.

Craven Arms.—Hospital, Long Lane, for Ludlow Joint Committee.

Hadley.—Proposed isolation hospital for the district.

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ENGLAND—*continued.*

STAFFORDSHIRE.

Burslem.—Factory, North Road. Messrs. Wood & Goldstraw (of Tunstall), architects.

Newcastle-under-Lyme.—Children's Home, for B.G.

Trentham.—Police Station and two houses, for the County Standing Joint Committee. Mr. W. J. Nevett, architect, County Buildings, Stafford.

SURREY.

Shottermill.—Council school.

SUSSEX.

Broadbridge Heath and Crawley.—Council schools.

East Grinstead.—Public Elementary Council school: additions and alterations. Mr. F. J. Wood, County surveyor, County Hall, Lewes.

WARWICKSHIRE.

Coventry.—Electricity sub-stations, Goleshill and Harefield Roads, for the Corporation.

House, Churchill Avenue, for Mr. H. T. Preedy.

Five houses, Binley Road, for Mr. C. Blockley.

Eight houses, Burlington Road, for Mr. A. Jeffs.

Six houses, Edmund Road. Mr. E. H. Broad, builder, Radford Road; also seven houses, Hollies Road.

Eleven houses and house with shop, Hollies Road. Mr. A. Broad, builder, Foleshill Road.

Seven houses, Latham Road, for Mr. E. Jordan.

Four houses, Ludlow Road, for Mr. G. W. R. Philpot.

Fifteen houses, Minster Road, for Mr. G. Farmer.

House, Radford Road. Mr. B. Ault, builder, Spon Street.

House, Sir Thomas White's Road, for Mr. B. S. Chinn.

Nine houses, Wyley Road. Messrs. Clarke & Sons, builders, Coronation Road.

Nine houses, Stoke Row, for Mr. T. Dalton.

Laundry, Kensington Road: additions for the Kensington Laundry Co.

Premises, Parkside: extensions for the Siddeley-Deasy Motor Manufacturing Co., Ltd.

WORCESTERSHIRE.

Bromsgrove.—Council school (£2,500).

Strensham.—Council school for about seventy-five places, and alterations to existing school.

YORKSHIRE.

Aldwark.—Public elementary school for sixty places.

Doncaster.—Council school, Chequer Road.

Greetland.—St. Thomas's Sunday School.

Halifax.—"Craigie Lea": alterations as Children's Home, for B.G. Mr. Williams, architect, Post Office Buildings, Commercial Street.

Maltby.—Hotel. Mr. F. Hopkinson, architect, 40 Bridge Street, Worksop.

Selby.—Stores, Ousegate, for Messrs. J. & R. Wood (of London and York).

Skelton-in-Cleveland.—Council school, High Street.

Sowerby Bridge.—Proposed Catholic Church, Bolton Brow.

SCOTLAND.

Clydebank.—Proposed tuberculosis hospital.

Glasgow.—Alterations; also erection of premises, Maryhill, for the Juvenile Delinquency Board.

No. 167 Adelphi Street: additions and alterations, for Messrs. Edgar & Crerar, Ltd.

Glenlomond.—Sanatorium (£40,000), for Fife and Kinross Joint Sanatorium Board.

Lanark.—Sanatorium, Netherton Farm site, Hyndford.

Montrose.—Academy: extension. Mr. Gavin, architect, 194 High Street.

Paisley.—Store, Seedhill Road, for Messrs. Clark & Co. (of Anchor Mills).

Works, Murray Street: addition, for Messrs. Mackenzie Bros.

Penicuik.—Parish Council, School Board, and Town Council offices.

Port Glasgow.—Offices and shop, for Messrs. Ferguson Bros.

Rutherglen.—Buildings, Old Manse site, Main Street. Mr. G. Sinclair (of Glasgow), architect.

Town Hall: reconstruction. Mr. J. E. Gillespie (of Glasgow), architect.

Whitekirk.—Parish Church: restoration (£6,500). Sir R. S. Lorimer, F.R.I.B.A., architect, 49 Queen Street, Edinburgh.

IRELAND.

Dublin.—Additions and alterations, Grafton Street, for Messrs. Millar & Beatty.

Gorey.—Seventy labourers' cottages, for R.D.C. Mr. B. W. Webster, Council architect.

Maryborough.—Central tuberculosis dispensary, for Queen's County Committee.

New Ross.—Thirty labourers' cottages, for R.D.C.

Tara Hill.—Church. Mr. B. W. Webster, contractor (£1,300).

PATENT SPECIFICATIONS PUBLISHED FEBRUARY 18, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 29,383. Dec. 20, 1913.—J. M. Rutter, Farnham Road, Guildford. Boiler for domestic and such like purposes.

29,487. June 23, 1914.—Samuel Swift, 129 Dykes Hall Road, Sheffield. Combination of radiators with gas stoves.

480. Jan. 7, 1914.—Frank Pascall, Interoven Stove Company, Ltd., 156 Charing Cross Road, W.C. Domestic fireplaces and cooking stoves.

1,197. Jan. 16, 1914.—W. T. B. Masters, Farthingstone, Cambridge Road, Middlesborough-on-Tees. Tying together partition slabs or blocks.

1,633. Jan. 21, 1914.—John Shanks, Tubal Works, Barrhead, Renfrewshire. Shower-bath fittings.

2,678. Feb. 2, 1914.—J. G. Starr, 51 Denham Street, Hawthorn, Victoria, Australia. Ball or float valve and stop or bib cocks for water or other liquids.

4,127. Feb. 17, 1914.—R. L. Taylor, Mount Washington, Baltimore, Maryland, and W. W. James, 16 South Allen Avenue, Richmond, Henrico, Virginia, U.S.A. Safety device for elevators.

8,891. April 8, 1914.—B. W. Brooks, 21 Saxon Road, Wood Green, N. Self-contained heating apparatus capable of submersion in liquid to be heated and adapted for heating purposes.

18,579. Aug. 12, 1912.—Frederick Turner, 54 Claremont Road, Handsworth, Birmingham. Domestic firegrates and the like and the fittings therefor.

19,574. Sept. 9, 1914.—R. H. Banning, 1029 Filbert Street, Oakland, Alameda, California, U.S.A. Screen attachment for window sash.

23,474. June 24, 1914.—W. B. Young, High Street, 1 Weir Street, Falkirk, Stirlingshire. Ranges or grates.

9,771. April 20, 1914.—The Macey Company, Grand Rapids, Michigan, U.S.A. Safes.

11,490. May 9, 1914.—T. A. De Vilbies, and the De Vilbies Manufacturing Company, 1302 Dorr Street, Toledo, Ohio, U.S.A. Ventilating fans.

23,659. Oct. 18, 1913.—A. J. Fontes, junr., 161 Rua do Ouvidor, Rio de Janeiro. Building bricks.

27,564. Dec. 1, 1913.—John Gibbs, Grange Road Works, King's Heath, Birmingham. Casement fasteners.

2,365. Jan. 29, 1914.—La Societe Anonyme la "Ceramique Nationale" of Welkenraedt, Belgium. Apparatus for making tiles.

2,581. Jan. 31, 1914.—Fortunato Beradi, fu Enrico, 6 Via Chiatamone, Naples. Ventilators.

Any of the above specifications may be obtained from J. D. Roots & Co.

AT a meeting of the Devonport Education Authority last Monday, a letter was read announcing the sanction of the Local Government Board to the borrowing of £10,240 for the rebuilding of King Street Council School. The Higher Education Sub-Committee reported that the revised plans for the extension of the Technical School had been approved by the Board of Education.

THE Local Government Board have sanctioned, without holding a local inquiry, the Shipley Urban Council's application to borrow money for the erection of new public offices on the Manor House Estate. It is understood that the work will be commenced as soon as arrangements have been made for temporary offices. The scheme involves the demolition of the old Manor House, one of the most ancient buildings in the neighbourhood. It was erected in 1630, and has many architectural features which are to be preserved by the erection of some of the stonework in Crowgill Park. The premises have been used for public offices for the last thirty-five years.

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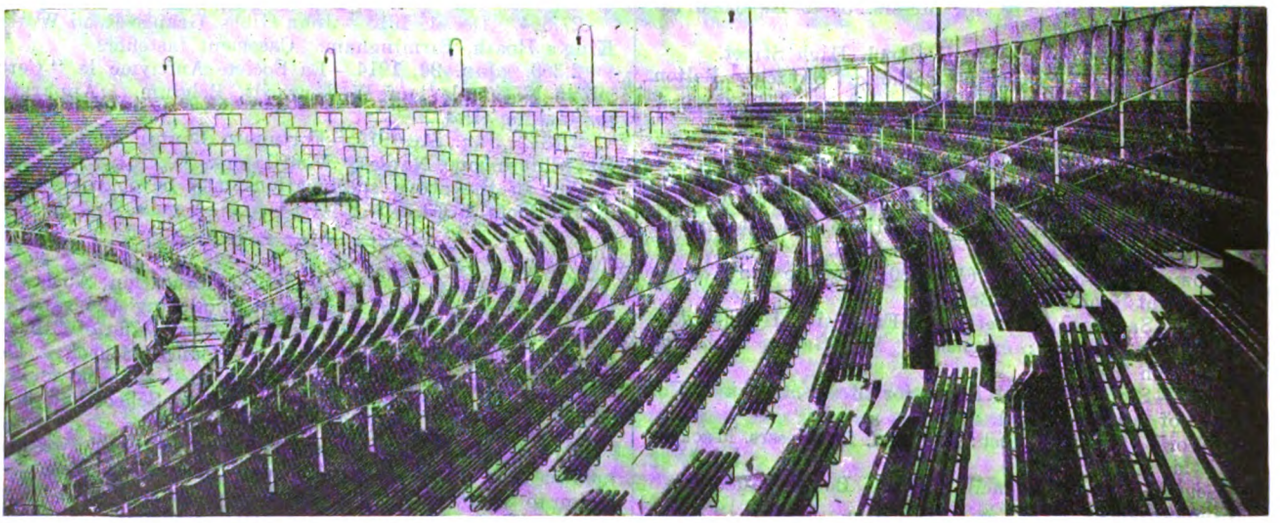
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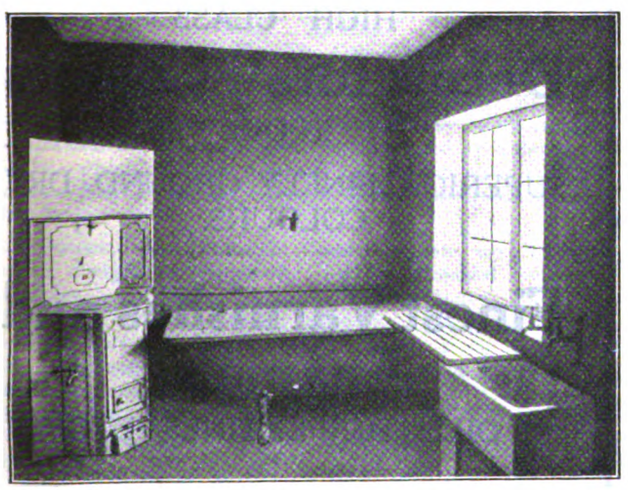
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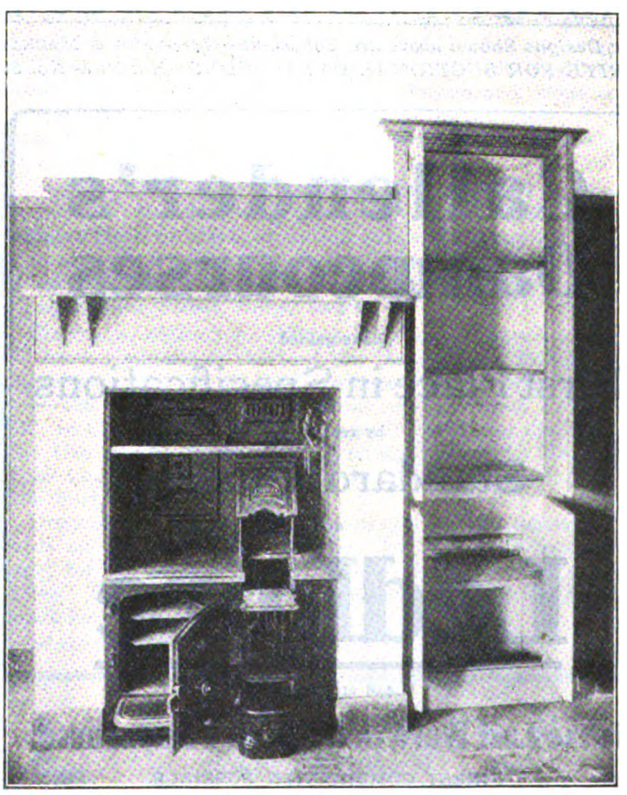
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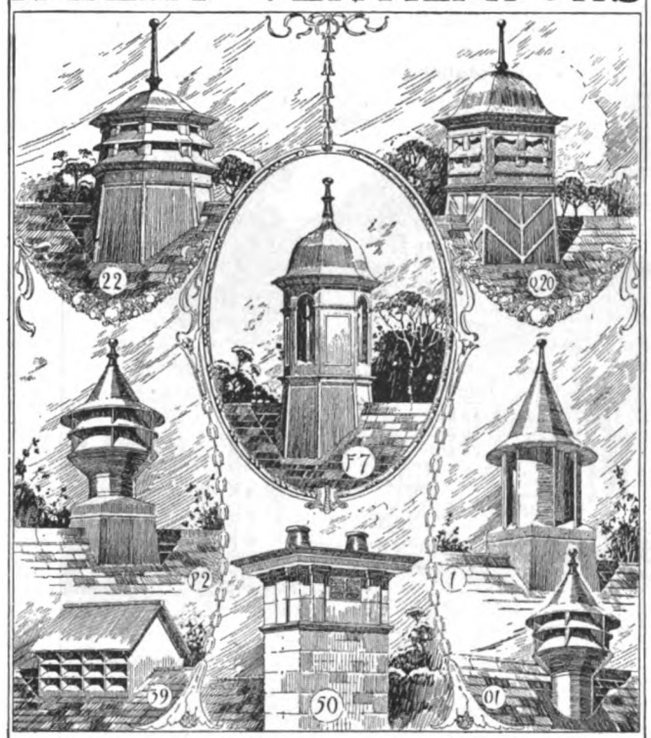


SWANSEA CORPORATION HOUSING SCHEME.—Mr. ERNEST MORGAN, Architect

WE illustrate above interior and exterior views of the six sample houses erected at Mayhill from the designs of Mr. Ernest Morgan, architect, for the Swansea Corporation housing scheme of 500 houses for the working classes. The best class house contains a living room, 12 feet 6 inches by 13 feet 8 inches; scullery, 12 feet 11 inches by 7 feet 11 inches; larder, 3 feet by 6 feet 10 inches; w.c. and porch on ground floor, and on the first floor three bedrooms, the largest of which is 13 feet 5 inches by 10 feet 9 inches. Each house is fitted with cupboards, wardrobes, dresser, and kitchen range. The "Twin" Combination Bath system of Messrs. Mills, English & Co., an invention of this Swansea firm, has been installed, which will be a great boon to the householder, as little or no attention is required, and hot water is given automatically. With this patent the boiler can be fixed in almost any corner, for the space required is 2 feet by 2 feet. The "Twin" system is recommended for garden cities, cottages, bungalows, and other occasions where space and economy are all-important considerations.

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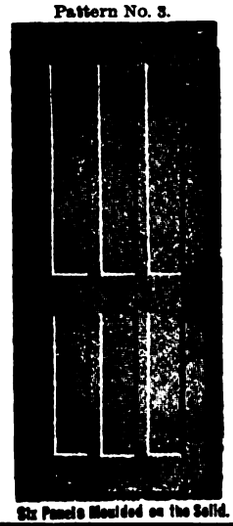
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THE
Architect and Contract Reporter.
FRIDAY, FEBRUARY 26, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

ABBOTS LANGLEY.—March 9.—For erection of two pairs of semi-detached cottages near Bedmond, in the parish of Abbots Langley, for the Watford Rural District Council. Deposit £1 1*s.* The Council Offices, 9 Market Street, Watford.

BARMING HEATH.—March 4.—For erection of an assistant medical officer's house at the Lunatic Asylum, for the Kent County Asylums Committee. The Engineer at the Asylum, Barming Heath, near Maidstone.

BARNET.—March 2.—For erection of thirty-two cottages and a block of flats on their housing estate, for the Urban District Council. Deposit £1 1*s.* The Surveyor to the Council, 40 High Street, Barnet.

BARNET.—March 3.—For extension of the nurses' home in connection with the Union Infirmary at Barnet, for the Guardians of Barnet Union. Deposit £2. Messrs. White, Son & Pill, architects, 15 High Street, Barnet.

BARNOLDSWICK.—March 1.—For the erection of a pumping station adjoining the existing one, for the Urban District Council. The work will be let in three sections, as follows: (1) builders; (2) joiners; (3) slaters. The Gasworks, Barnoldswick.

BARNSLEY.—March 4.—For erection of a new Town Hall in Church Street. Deposit £2 2*s.* Mr. W. P. Donald, Town Clerk, Town Clerk's Office, Barnsley.

BIRMINGHAM.—March 5.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of ordinary works and repairs to the buildings in their charge in the Birmingham, Cardiff, Liverpool, and Nottingham districts during one year from April 1. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

BIRMINGHAM.—March 16.—For alterations to the Council school in Aston Lane. Send applications and £2 deposit by March 1 to the Finance Department of the Education Office, Council House, Margaret Street, Birmingham.

BOLTON-UPON-DEARNE.—March 15.—For erection and completion of 293 houses and eight houses and shops, for the Bolton-upon-Dearne Urban District Council. The work will be let in two contracts—viz.: (Contract No. 1) 99 dwelling-houses of three types and three dwelling-houses and shops in Furlong Road, Bolton-upon-Dearne; (2) 194 dwelling-houses of three types and five dwelling-houses and shops on Barnsley Road, Goldthorpe. Deposit £2 2*s.* for each set of quantities. Messrs. Garside & Pennington, architects, Ropergate, Pontefract.

BURY.—March 8.—For the following contracts in connection with the electricity generating station extension at Chamber Hall, for the Corporation—viz.: (Contract No. 2AA) structural steel work; (4A) steel window frames. Deposit £2 each contract. Mr. J. A. Settle, A.M.I.C.E., borough engineer, Bank Street, Bury, Lancs.

COLEFORD.—March 6.—For erection of a Council school and teacher's house at Coleford, for the Somerset Education Committee. Mr. W. F. Bird, architect, Midsomer Norton.

DOVER.—March 7.—For biennial contracts from April 1, 1915, in the following contract areas in the Dover district—viz.: Canterbury, Shorncliffe. Send application by March 1 to the Commanding Royal Engineer, the R.E. Office, Archcliffe Fort, Dover.

DUNSTABLE.—March 2.—For erection of two additional wards on the site of the isolation hospital at Kensworth Lane, for the Dunstable and District Hospital Joint Committee. Deposit £2 2*s.* The Surveyor's Office, Town Hall, Dunstable.

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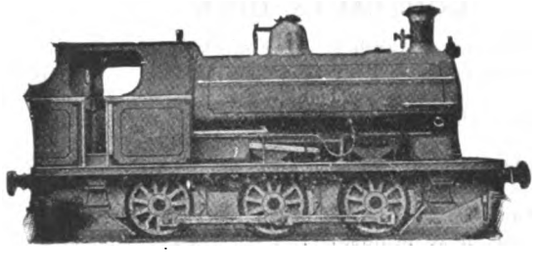
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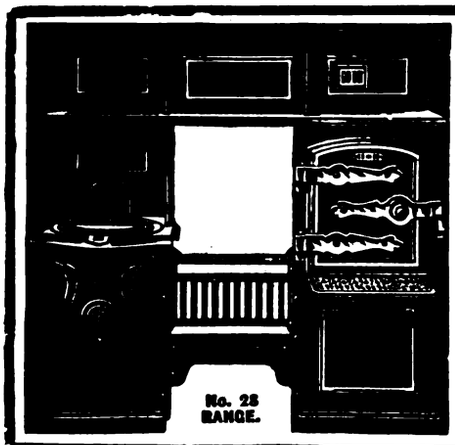


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EAST GRINSTEAD.—Feb. 27.—For alterations and additions and erection of a new cookery classroom, offices, &c., at the East Grinstead public elementary Council schools, for the East Sussex Education Committee. Send applications by Feb. 27 to Mr. F. J. Wood, county surveyor, County Hall, Lewes.

EAST HANNINGFIELD.—March 8.—The Chelmsford Rural District Council invite alternative tenders for erection of two or four cottages (in pairs) at East Hanningfield. Mr. J. Dewhirst, engineer and surveyor, Waterloo Lane, Chelmsford.

GLOUCESTER.—March 11.—For preparing pumping station site and construction of approach road at Ketford; erection of pumping station, buildings, and foundations at Ketford; supplying and laying mains from pumping station to reservoir at Madam's Wood; forming site and building reservoir at Brand Green, for the Gloucester Corporation. Deposit £5. Messrs. Fox, Moore, Bateman & Fox, 5 Victoria Street, Westminster, or Mr. R. Read, surveyor, Guildhall, Gloucester.

HADLEIGH.—March 6.—For alterations and repairs to 49 Angel Street, proposed to be used as a children's home, for the Guardians of Cosford Union. Mr. A. Newman, clerk, Union Offices, Hadleigh, Suffolk.

HALIFAX.—March 1.—For various trades required in erection of the first block of fifteen houses and a shop on the Elm Grange Estate. Send names by March 1 to Messrs. C. F. L. Horsfall & Son, architects and surveyors, Lord Street Chambers, Halifax.

HORDEN.—For extension of business premises at Horden, for the Seaham Harbour Co-operative Society, Ltd. Mr. L. G. Ekins, architect. Co-operative Wholesale Society, Ltd., West Blandford Street, Newcastle-on-Tyne.

HORNSEY.—March 1.—For erection of a rifle range building, to be constructed in timber framing and corrugated iron, within the borough of Hornsey, for the Hornsey Urban District Council. Mr. E. J. Lovegrove, borough engineer and surveyor, Town Hall, Highgate, N.

HUDDERSFIELD.—March 2.—For the various trades required to be executed in erection of a tuberculosis hospital at Bradley Gate, for the Corporation—viz.: (Contract No. 1) roads and drainage; (2) excavator, bricklayer and mason; (3) concretor; (4) carpenter and joiner; (5) plumber and glazier; (6) plasterer; (7) slater; (8) painter; (9) electrician; (10) heating engineer. Deposit £1 1s. Mr. K. F. Campbell, M.I.C.E., M.I.E.E., borough engineer, Town Hall, Huddersfield.

HUDDERSFIELD.—March 4.—For the various works required in the construction of a filter house and other works (all trades in one contract) on the south side of Blackmoorfoot Reservoir, Meltham, near Huddersfield, for the Corporation. The Waterworks Engineer, Town Hall, Huddersfield.

IRELAND.—March 6.—For erection of two temporary blocks for male and female patients, each block to accommodate fifty patients, at the District Asylum, Ballinasloe. The buildings to be erected in Hy-Rib system of reinforced concrete. Deposit £2 2s. Mr. G. B. Meenan, engineer, 83 Botanic Road, Dublin.

IRELAND.—March 9.—For building sixty-nine labourers' cottages in the following districts, for the North Dublin Rural District Council—viz.: Blanchards Town district, 3; Coolock district, 18; Drumcondra rural district, 6; Finglas district, 6; Howth and Howth Junction district, 36. Mr. J. O'Neill, clerk, North Brunswick Street, Dublin.

KEIGHLEY.—March 3.—For conversion of conveniences in Alpha and Pitt Streets, for the Corporation. The Borough Engineer.

LEEDS.—March 4.—For the reconstruction of drainage at Leeds Head Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The Assistant Architect, H.M. Office of Works, Infirmary Street, Leeds.

MIRFIELD.—March 13.—For the extension of shedding and offices in the Council's yard, Fold Head, for the Mirfield Urban District Council. Deposit 10s. 6d. Mr. Edwin Gill, engineer and surveyor, Council Offices, Mirfield.

NORTHAMPTON.—March 15.—For building 20 cottages at Hollowell, for the Corporation. Deposit £2. The Waterworks Office, Fish Street, Northampton.

NORTH SHIELDS.—March 6.—For pulling down existing buildings on the Union Quay, North Shields, and erecting and completing shop, stores, offices, &c., including reinforced-concrete retaining walls, floors, partitions, &c., for the Tynemouth Borough Council. Deposit £2 2s. Mr. J. F. Smillie, borough surveyor, Tynemouth.

NOTTINGHAM.—March 11.—For the erection and completion of twenty-seven cottages and two blocks of tenements on the site adjoining Pennyfoot Street and Newington Street. The City Architect, Guildhall, Nottingham.

OLDBURY.—March 12.—For erection of an extension block of schools to accommodate about 490 children at Rood End, for the Urban District Education Committee. Send applications and £1 1s. deposit by Feb. 27 to Mr. A. Long, architect, New Street, West Bromwich.

SCOTLAND.—For the various building trades in connection with the construction of five new cottages and steadings for smallholders, and with the adaptation of the existing farm steadings on Pentland Mains Farm (1½ miles from Loanhead Station). Mr. H. M. Conacher, secretary, Board of Agriculture for Scotland, 29 St. Andrew Square, Edinburgh.

SCOTLAND.—March 1.—For execution of joiner work required in the erection of electricity sub-station at Walton Street, Dundee, for the Corporation. Mr. H. Richardson, M.I.E.E., Dudhope Crescent Road, Dundee.

SCOTLAND.—March 1.—For additions to farm steading at Greens, Mosstowie. Mr. J. Wittet, architect, Elgin.

SCOTLAND.—March 1.—For the following works required in connection with the proposed construction of a public convenience in Gairbraid Street, Glasgow, for the Corporation—viz.: (1) mason, brick, joiner, &c., works, and (2) sanitary fittings. The Office of Public Works, City Chambers, 64 Cochrane Street, Glasgow.

SHEFFIELD.—March 2.—For the excavation and construction of a concrete tar and liquor tank, 141 feet 6 inches long by 58 feet 6 inches wide by 24 feet deep, at their Grimesthorpe Station, for the Sheffield United Gas Light Company. Mr. J. W. Morrison, M.Inst.C.E., the Company's Offices, Commercial Street, Sheffield.

SHREWSBURY.—March 5.—For erecting new pig boxes and executing small repairs at Crowmoor Farm, for the Salop County Council. The County Land Agent, County Buildings, Shrewsbury.

SLEAFORD.—For proposed alterations and additions to premises in Northgate for new Council chamber and offices, for the Rural District Council. Deposit £1. Mr. W. B. Marsden, surveyor, 74 Southgate, Sleaford.

SWINESHEAD (LINCS.).—For the erection of two houses, farm buildings, and alteration works at Brand End Farm, for the Small Holdings Committee of the Holland County Council. Mr. E. J. A. Christie, county land agent, County Council Offices, Boston.

TREDEGAR.—March 15.—For erection of a caretaker's lodge at the new cemetery, Cefn Golen, for the Tredegar Urban District Council. Mr. W. Lloyd Roach, surveyor to the Council, Bedwellty House, Tredegar.

TYWARDREATH.—March 6.—For erection of a Council school for girls and infants at Tywardreath, for the Cornwall Education Committee. Deposit £1 1s. Mr. B. C. Andrew, architect to the Committee, Biddick's Court, St. Austell, or at the Boys' School.

WALES.—March 1.—For erection, completion, and maintenance for six months of proposed infants' school for 186 scholars, together with domestic and manual training rooms, at the New Broughton Council School, near Wrexham, for the Denbighshire Education Committee. The work will be let in two contracts: (Contract 1) permanent work, which include concrete and brick foundations, walls, chimneys, and outbuildings; (2) superstructures of a semi-permanent type, timber framed weather boarded and slated roof. Send applications and £1 1s. deposit by March 1 to Mr. W. D. Wiles, county architect, 42A High Street, Wrexham.

WALES.—March 2.—For the erection of two public conveniences (four-stall)—viz., one at Llanbradach and one at Nantgarw—for the Caerphilly Urban District Council. Mr. A. O. Harpur, surveyor, Council Offices, Caerphilly.

WALES.—March 4.—For building forty to fifty semi-detached houses at Cwmaman, near Aberdare. Mr. A. S. Cameron, architect, 14 Victoria Square, Aberdare.

WALES.—March 23.—For the extension and alteration of "Wauniago," near the Carmarthen Mental Hospital, for the Committee of Visitors. Messrs. George Morgan & Son, architects, 24 King Street, Carmarthen. Send application by March 1 to Mr. W. J. Wallis-Jones, clerk to the visitors, 34 Quay Street, Carmarthen.

WALKDEN (LANCS.).—March 5.—For the construction of a pump house for the Barton Old Hall sewage farm, for the Worsley Urban District Council. Deposit £2. Mr. J. Howard, surveyor to the Council, Town Hall, Walkden.

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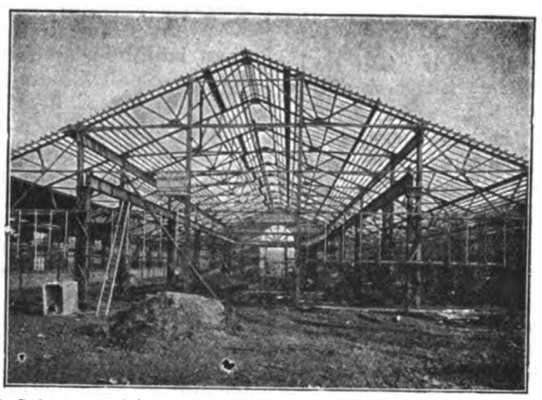
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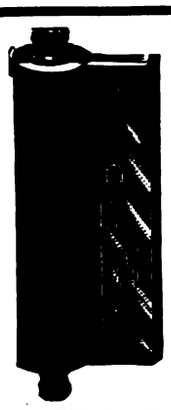
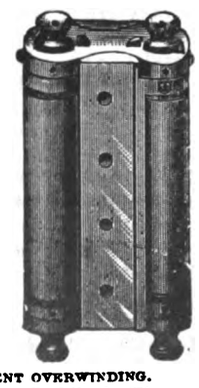
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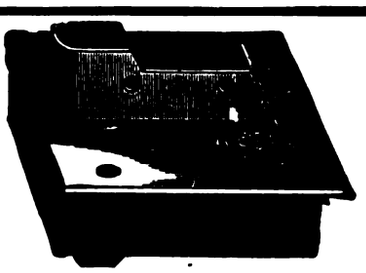
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TENDERS.

ABERGAVENNY.

For carrying out alterations and additions to the Abergavenny Police Court and Station, for the Monmouth County Standing Joint Committee. Mr. W. TANNER, county surveyor, Newport, Mon.

Reed	£1,900	0	0
Moon	1,897	0	0
Gough Bros.	1,868	0	0
Poulton & Whiting	1,860	0	0
Leadbeter	1,837	0	0
Thomas & Son	1,779	0	0
Watkins	1,726	10	0
Williams	1,710	19	2
Boyt	1,545	0	0
Lewis & Co.	1,520	0	0
Foster & Hill	1,495	0	0
HORSINGTON BROS., Abergavenny (*accepted*)	1,445	0	0

ASHBY-BY-BRIGG.

For the erection of additions to the new Council School, for the Lindsey County Council Education Committee. Messrs. SCORER & GAMBLE, architects, Lincoln.

Thompson	£6,545	0	0
Scarborough	6,353	16	4
Kettlewell	6,297	0	0
S. & R. Horton & Sons	6,295	0	0
Jarvis & Sons	6,280	0	0
Swaby & Walsham	6,220	0	0
Fish & Sons	6,191	0	0
Wright & Son	6,115	0	0
Thornhill Bros.	6,056	1	3
Pumfrey	5,750	0	0
Long & Sons	5,600	0	0
GILBERT & HALL, Nottingham (*accepted*)	5,520	0	0

CANTERBURY.

For construction of a bakery at the Chartham Asylum, for the Kent County Council.

G. BROWNING, Canterbury (*recommended*)	£4,337	0	0

COVENTRY.

For the enlargement of Little Heath Council School, for the Education Committee. Messrs. G. & I. STEANE, architects, Coventry.

R. P. GATHERCOLE, Leamington (*accepted*)	£8,650	0	0

For the erection of twenty-one workmen's cottages and seventy-six workmen's flats, for the Town Council.

E. HARRIS, Coventry (*recommended*)	£17,591	2	5

DURHAM.

For alterations to the Laundry at the Workhouse, Crossgate, for the Guardians of Durham Union. Messrs. W. & T. R. MILBURN, F.R.I.B.A., architects, Sunderland.

GIBSON & BRO., Durham (*accepted*)	£2,052	10	0

LEICESTER.

For the erection of manufacturing premises, for Messrs. J. Richardson & Co., Ltd., wholesale chemists. Mr. A. HERBERT, A.R.I.B.A., architect, Leicester and Coventry.

E. Kelley & Son	£14,249	0	0
Parnell & Son	14,240	0	0
Herbert & Sons	12,974	0	0
Bentley & Co.	12,926	0	0
Kellett & Son	12,900	0	0
Haskard, Rudkin & Beck	12,189	0	0
Duxbury & Son	12,188	0	0
Bowles & Son	12,121	0	0
F. Elliott	12,004	0	0
J. Chapman & Sons, Ltd.	11,653	0	0
CLARK & GARRATT, Leicester (*accepted*)	11,649	0	0

LONDON.

For the erection of an annexe to the Worthington engine house at Abbey Mills, for the London County Council.

Dick, Kerr & Co.	£6,076	0	0
Fasey & Sons	5,859	0	0
Ford	4,427	0	0
Mowlem & Co.	4,425	0	0
Mills & Sons	4,307	0	0
HOLLOWAY BROS. (LONDON), LTD., Lambeth, S.E. (*accepted*)	3,849	0	0
Chief engineer's estimate	4,000	0	0

LONDON—*continued.*

For enlarging the playground at the Holmes Road School, St. Pancras, for the London County Council.

General Building Co.	£1,497	0	0
Pitcher	1,066	19	6
Monk	925	0	0
Roome & Co.	915	0	0
Bovis, Ltd.	887	0	0
Godson & Sons	885	0	0
W. F. Blay, Ltd.	847	0	0
Triggs & Co.	837	0	0
McCormick & Sons	830	0	0
Brand, Pettit & Co.	795	0	0
H. & E. Lea	793	0	0
F. Bull	791	0	0
Marchant, Hirst & Co.	776	0	0
STEVENS & SONS, 67 Crouch Hill (*accepted*)	748	0	0
Architect's estimate	835	0	0

For enlarging the Shelburne Road School, Islington, by about 350 places, for the London County Council.

W. F. Blay, Ltd.	£9,893	0	0
McCormick & Sons	9,800	0	0
Shurmur & Sons	9,720	0	0
Rowley Bros.	9,680	0	0
Wallis & Sons	9,677	0	0
Brand, Pettit & Co.	9,492	0	0
Fairhead & Son	9,473	0	0
Leng	9,339	0	0
Monk	9,290	0	0
Willmott & Sons	9,184	0	0
Miskin & Sons	9,074	0	0
W. J. MADDISON, Clarkson Street, Canning Town (*accepted*)	9,057	0	0
Architect's estimate	9,382	0	0

ST. MAWES.

For the erection of four dwellings for the working classes at St. Just Lane, near St. Mawes, for the Truro Rural District Council.

Thomas & Sons	£1,293	0	0
C. & J. Harris	1,275	0	0
Concrete Block Co.	943	0	0

FIRE RESISTING SAFES—A CORRECTION.

OUR attention has been called to the fact that our issue of January 29 last contained by inadvertence the following incorrect and misleading statement:—

"It is *apropos* to mention that the firm of John Tann was, in 1843, under its previous name of E. Tann & Sons, the original inventor and patentee of the system of rendering safes fireproof by the generation of moisture, a system which is now used by nearly every safe manufacturer."

Upon investigation we find that the original inventor of this system of rendering safes fire-resisting by the use of chambers containing non-conducting and moisture-generating composition was Thomas Milner, who patented his epoch-making invention in February 1840, nearly four years before the patent of Messrs. Tann referred to above. Moreover, as a result of the making and selling of safes according to this latter patent, certain actions were brought by Messrs. Milner for the infringement of their prior patent rights, which resulted in Messrs. Milner being granted a perpetual injunction in Chancery imposing a penalty of £500 on persons making, vending, buying, or using any safe in which such vapourising materials should be found. The defendant was ordered to pay the costs of the three actions.

As a natural result of these actions, a "Disclaimer and Memorandum of Alteration" to Messrs. Tann's patent of 1843 was advertised in prominent newspapers and duly attested, stamped, and filed with the Clerk of the Patents of England in 1851.

The fire-resistance of Milner's safes to-day is secured upon the principle and plan discovered by Thomas Milner and patented by him in 1840, and strengthened by successive improvements, the result of careful study and extensive practical experience.

Having perused the terms of the disclaimer referred to above, we express our apologies to Messrs. Milner, upon whose claims in this direction we regret having cast reflection by the incorrect statement in our issue of January 29 last.

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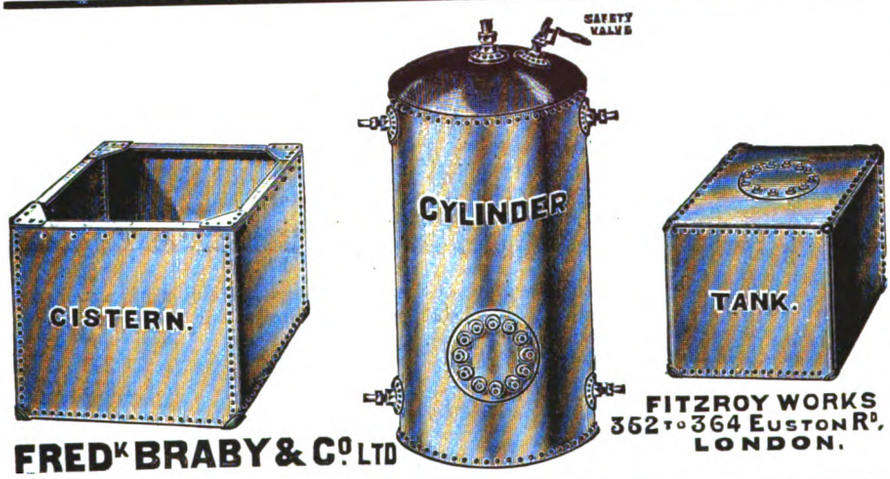
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G. E. C. ACTIVITIES.

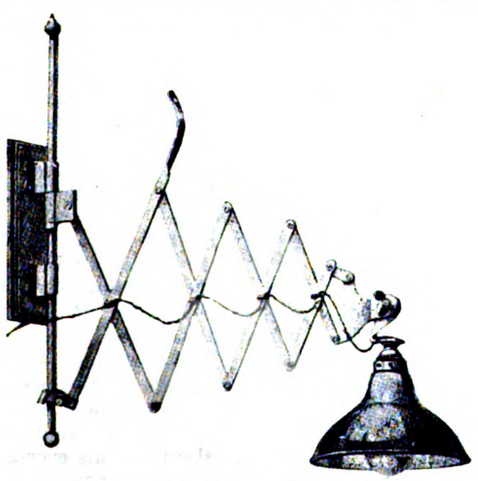
WE wish to draw the attention of our readers to two new examples of the enterprise of the General Electric Company.

Counting cheapness everything, consumers have in this country for many years been fully contented with the conical opal shade for incandescent electric lamps where the shade served purely utilitarian purposes. But where æsthetic or scientific considerations affected the choice, they have had at their disposal a number of shades which, by reason of the cost of the material and of the accuracy with which they had to be made, were considerably more expensive. These conical opal shades were made almost entirely in enemies' countries, and as a result of the war the supply has been largely cut off. Many, however, are being imported from neutral countries, but whether they are actually manufactured there is a different matter altogether. Rather than rely upon such sources for their supplies the General Electric Co., Ltd., of 67 Queen Victoria Street, London, E.C., have, in conjunction with an old-established firm of English glass manufacturers, introduced a new opal shade, the pleasing appearance of which affords a remarkable contrast with the foreign product. Quite apart from point of view of appearance, the improvement in the colour of this glass operates to increase



G. E. C. ENGLISH-MADE OPAL SHADE.

the efficiency of reflection from its surface. Those who cast their minds back over the history of electric light will recollect that no material change has been made in the form of the foreign conical reflector since it was first introduced; the shape for the metal-filament lamp is identical with what it was for the carbon lamp. As illuminating engineers know, the efficiency of the reflector depends largely upon the position of the filament of the lamp relative to the reflector, so that however suitable the old reflector was for the carbon lamp its inefficiency as a reflector for the metal filament lamp is beyond question. In preparing the new designs the General Electric Co., Ltd., have therefore made sure that the shape suits the position of the filament in a tungsten lamp. The design



G E. C. EXTENSIBLE SWING BRACKET, NO. F. 3,092.

takes the form of the pleasing "Ogee" shape which is shown in the illustration. Two standard sizes are stocked, the smaller one 7 in. diameter by 4 in. deep, and the larger 9 in. diameter by 4 in. deep. Although the prices naturally show an increase upon those of the foreign article the General Electric Co. feel sure that the consumer will willingly pay the increased price when it is pointed out to him that he is buying a British product and that he is getting value for his money, not only in the more pleasing appearance of the shade but also in the higher efficiency of reflection which will rapidly repay for the few extra coppers which he is spending.

Among the numerous electric-light brackets and fixtures for strictly utilitarian purposes which the General Electric Co., Ltd., have produced is the one illustrated here. Some of the leading particulars of this new bracket (Patent No. 15,607/13) briefly stated are:—

The projection is adjustable between 8 in. and 32 in.; there is a horizontal swivelling action within a semi-circle, the angle of reflection is adjustable, as shown by the wing-nut provided. By means of the curved extension of one of the arms of the lazy-tongs the light can be raised to a fixed point 27 in. above the normal position. The material of construction is polished brass. The bracket is particularly valuable in business offices, drawing offices, &c. It is known as the "Varsity," and has the catalogue No. F. 3,092.

A CHINESE CONTRACT.

The General Electric Co. of China, Ltd., has, we are informed, secured the contract for all the Government requirements for Osram drawn-wire tungsten lamps and electrical supplies for Hong Kong for the year 1915.

THE LONDON ASSOCIATION OF MASTER DECORATORS.

A MEETING of the Executive Committee was held at the office of the Secretary, 92 Queen Victoria Street, E.C., on Wednesday, February 17. In the absence of the Chairman of the Committee, Mr. C. E. Wilkinson, President, took the chair.

The question of the publication of the Association book of prices of Painters' and Decorators' Work was considered, and it was decided to proceed with the printing forthwith. It was pointed out that the prices were the result of a considerable amount of work on the part of practical men, who had given very careful consideration to the subject. It was resolved that copies of the price list should be sent to the Royal Institute of British Architects, Society of Architects, Architectural Association, Surveyors' Institution, and other similar bodies, such list being issued as the official price list of the Association, which might be safely taken as a guide in all cases of dispute affecting work in the London area.

Messrs. Story & Co., of 49 Kensington High Street, were unanimously elected members of the Association.

A letter was read from the Secretary of the National Federation of Associated Paint, Colour, and Varnish Manufacturers with reference to the arrangement made as to prices of proprietary articles for the public and the trade respectively.

Mr. John Anderson expressed his pleasure at the result of the outcome of the conference held between the Federation and the National Association of Master House Painters and Decorators, and it was agreed that a full report of the matter should be made at a general meeting of the London Association on March 9 at 7.30 P.M.

It was unanimously resolved that the Secretary be instructed to write to the Secretary of the National Association of Master House Painters and Decorators, expressing the great appreciation of the London Association on the valuable work done in connection with the conference above mentioned.

The Education Committee reported that it had been decided to present book prizes to the value of £5 to four students in the London County Council School of Building, Brixton, viz., David H. Stephens, James F. Johnson, Albert E. King, and Claude J. M. Humphries.

The Chairman brought up the question of incorporating the Association, and, after some discussion, the matter was postponed to the next meeting for further consideration.

THE Electors to the Slade Professorship of Fine Art have re-elected Mr. Edward Schroeder Prior, M.A., Honorary Fellow of Gonville and Caius College, into the said Professorship. Mr. Prior is an A.R.A., F.S.A., and F.R.I.B.A., and was a pupil of Mr. Norman Shaw, R.A. He was one of the founders of the Art Workers' Guild, of which he was Master in 1906. He has been Secretary of the Arts and Crafts (London) Exhibition Society since 1902. His publications include "The History of Gothic Art in England," "The Cathedral Builders in England," and "The Mediæval Figure Sculpture of England." He represented Cambridge against Oxford in the High Jump, Long Jump, and Hurdles in 1872, and was High Jump Amateur Champion in the same year.

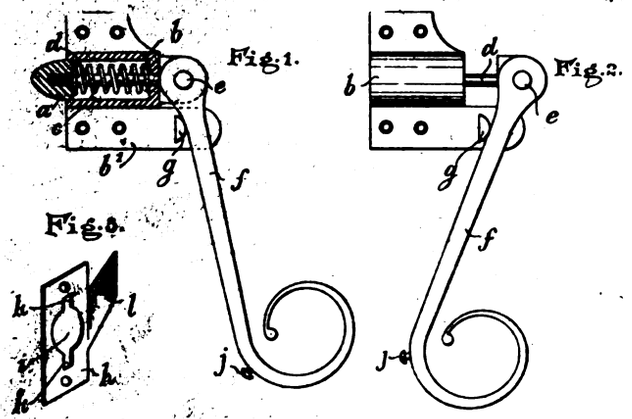
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BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 2,643. February 2, 1914.—Fastenings and stays for hinged windows. F. J. Burton, Xela, Oakfield Road, Woking, Surrey. This invention relates to fastenings for casement windows and the like of the kind which are adapted to secure the window when closed and to hold it when open. The fastening comprises a sliding bolt which is spring controlled, the handle being capable of a swinging or turning movement. Fig. 1 shows a construction of fastening having a comparatively short handle, provided with a stud adapted to engage slots in a striking plate, such as is shown in fig. 3. The bolt (*a*) is mounted in barrel (*b*), and has behind it a spring (*c*) tending to push it outwardly. A pin (*d*) extends from the bolt (*a*) rearwardly, and is pivotally connected at (*e*) to handle (*f*).



A projection (*g*) is formed on the plate (*b*¹) of the barrel (*b*), and acts as a fulcrum for the handle (*f*) to withdraw the bolt from engagement with the striking plate (*h*) shown in fig. 3. In use the plate (*b*¹) is fixed to the window, and the plate (*h*) to the frame or mullion. The bolt head (*a*) enters the hole (*i*) in the plate when the window is closed, and thus secures it. To open the window the lower end of the handle (*f*) is pressed from the position shown in fig. 1 to that shown in fig. 2 and withdraws the bolt; the window can then be opened and the handle raised so as to bring the projection (*j*) thereon into engagement with one of the slots (*k*) in plate (*h*), which is furnished with a tongue (*l*), and has two slots (*k*) to enable the plate to be fixed either right or left hand. In the example shown in fig. 4 the handle (*m*) is furnished with holes (*n*), and the striking plate (*o*) has a bracket on which is a pin (*p*), adapted to engage in one of the holes (*n*) so that the window can be held open at variable distances.—Jan. 6, 1915.

THE voting among the members of the Amalgamated Society of Carpenters and Joiners for the Assistant-General Secretary is as follows: A. G. Cameron, 6,920; J. L. Wright, 5,506; R. Robertson, 1,210; C. H. Young, 905; A. Dearnley, 872; and F. W. Lindley, 559. A number of overseas votes have yet to be included

VARIETIES.

THE Local Government Board have sanctioned the borrowing by the Withernsea Council of £7,500 for the South Cliff seawall scheme.

IT is estimated by Mr. J. Owen Parry, the engineer, that the proposed domestic scheme of sewerage for Cwmamman urban area in the Amman Valley will cost £13,109 15*s*.

WE regret to announce the death of Mr. Ernest Brown, who will be known to many of our readers for his association with the Leicester Galleries in Leicester Square, W., which, in conjunction with Mr. Phillips, he opened some years back. The late Mr. Brown enjoyed a high reputation as a salesman.

THE Hull Corporation Electricity Committee have instructed their engineer to prepare a report as to the practicability of supplying electricity to the houses of the working classes. It was stated that, with metallic filament lamps, and current even at 4*d*. per unit, electricity would be a cheap illuminant.

ARCHBISHOP WALSH, of Dublin, has informed the Housing Committee of the Dublin Corporation that he has decided not to use the Ormond Market building area as the site of a cathedral. He was to have purchased the site from the Corporation for £12,000. The Housing Committee have now directed the city architect to set in motion as soon as possible the erection of artisans' dwellings upon the site, acquired by the Corporation with that object. It is understood that difficulties arose in regard to the dispossession of tenants and the acquisition of river frontage.

THE annual meeting of the Sheffield Building Trades' Conciliation Board was held at the Builders' Exchange on Tuesday last. Mr. A. J. Forsdike, who has been President of the Board since its inception, was re-elected, Mr. H. Hodge (stonemasons) was elected vice-president in succession to Mr. Limage (bricklayers). Statements were made showing that there had been more employment than was anticipated at the beginning of the war, and arrangements had been made to keep the men fully employed. At the annual meeting of the Plasterers' Local Standing Joint Committee, Mr. J. E. Chadwick and Mr. S. W. Copestake were elected president and vice-president respectively.

WE have received the 1915 edition of "The Practical Electrician's Pocket Book," which is again edited by Mr. H. T. Crewe, M.I.Mech.E. (London: S. Rentell & Co., Ltd.). Although the amount of information and the number of pages has increased of late, the price still remains the almost nominal one of 1*s*. It must, however, in fairness be mentioned that the pages are less than in the previous edition, despite the inclusion of some new chapters. The Pocket Book and Diary sets out to give in a condensed and handy form much information relating to all branches of electrical work which it is difficult to obtain in a single volume elsewhere.

A SERIES of six Carpenters' Company lectures on the architecture of Belgian towns will be delivered at University College on Thursdays, at 5.30, beginning on March 4. The lectures will be respectively as follows: March 4, M. Victor Horta, Director of the Academy of Fine Arts, Brussels, on "Architecture in Belgium since 1840"; March 11, M. C F. Caluwaerts on "A General Review of Belgian Towns—Brussels, Malines, and Louvain"; March 18, M. Portielje, Honorary Secretary of the Royal Society of Architects of Antwerp, on "Town Planning in Antwerp, Past and Future"; May 6, Mr. Arthur Stratton on "Bruges and Ypres"; May 13 and 20, Mr. P. Abercrombie on "Brussels." The lectures will be public.

IN August last it seemed as if the theatrical world might be one of the last to be able to report "Business is as usual." But since then the public, helped perhaps by certain episcopal leading, has accepted theatre-going as a very pleasant duty. It is noteworthy that this ever-generous profession seems to-day even more than usually ready to give their services. To London performances there is no quicker finger-post than the "Official Theatre Guide," which may be seen attached to the walls of tube stations and clubs, hotels, libraries, and anywhere where men most do congregate. The "O.T.G." strictly limits its announcements to theatrical productions, and room can be made on it for all West-End plays. Particular care is paid to ensure accuracy—no easy matter in a world of sudden changes. This A.B.C. for London playgoers was instituted by the Society of West-End Theatre Owners nearly two years ago. Since then its scope has been enlarged and its usefulness increased.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, March 8.

Surveyors' Institution: Adjourned Discussion on papers by Mr. Isaac Dixon and Mr. E. H. N. Ryde on "The Report of the Land Enquiry Committee on Rating," at 8 P.M.

Tuesday, March 9.

Institution of Civil Engineers: Paper entitled "The Improvement of the River Clyde and Harbour of Glasgow, 1873-1914," by Sir Thomas Mason, A.M.I.C.E., at 8 P.M.

Wednesday, March 10.

Carpenters' Hall: Paper entitled "Brick Buildings," by Mr. H. M. Fletcher, M.A., F.R.I.B.A., at 7.45 P.M.

Tuesday, March 11.

London University: Lecture entitled "A General Review of Belgian Towns—Brussels, Malines, and Louvain," by M. C. F. Caluwaers (Member of Royal Commission on Belgian Monuments and Sites), at 5.30 P.M.

Society of Architects: Paper entitled "The Law relating to the Remuneration of the Architect," by Mr. A. Montefiore Brice, Barrister-at-law, at 7.30 P.M.

Historical Association (London Branch): Lecture entitled "Elizabethan London," by Sir Sidney Lee.

Friday, March 12.

Town Planning Institute: Lecture entitled "Some of the Larger Problems of Town Planning," by Mr. Thomas A. Mawson, Hon. A.R.I.B.A., at 6 P.M.

SOME OLD LONDON PANELLED ROOMS.

THE Folk-museum is an educational institution which has not as yet found full acceptance in England, where we lack the thoroughness and completeness with which such models are assembled in Scandinavia, and, to a lesser extent in comparison, in Germany. For the purpose of illustrating the national life of a past epoch in a country's history any collection, however extensive, of disassociated objects of ancient craftsmanship falls far short of its full educational value for the general public to a full-sized model of a dwelling of some particular period, completely and consistently furnished with a full equipment of household chattels of the same date. For the student, whether professional or dilettante, comparison of numerous examples of the same item, chimney-pieces, doorways, buffets, &c., is a necessity to enable him to avoid the formation of a narrow outlook and the restriction of imagination. But for the general public one concrete and complete example is more readily grasped and its lesson more easily assimilated.

At the Victoria and Albert Museum, South Kensington, an approach to the principle of the Folk-museum has been made by the arrangement of the architectural treatment of complete rooms, two of which, both from old London houses, form our present subject, and however much we may regret and reprobate the modern commercial practice of stripping old houses of their interior finishings to minister to the vanity of wealthy purchasers, a very different view may be taken of the propriety of preserving in proper association the parts of a complete room, which *force majeure* has displaced by the destruction of the building of which it was a component.

The first of these rooms to which we now draw attention is the panelled room known as the "State Room" in the "Old Palace" of Bromley-by-Bow Middlesex. The house formerly stood in St. Leonard Street, Bromley-by-Bow, and was erected in 1606. It has been suggested that the building and its ornamental details may have been the work of John Thorpe, but there is no very convincing evidence of the surmise beyond the fact that he was in practice from *circa* 1570 to 1610, *during* the time that the house was built. It should, however, be always remembered that there were others besides Thorpe who designed and built houses contemporaneously with their more famous associate.

The "Old Palace" is connected by tradition with the name of King James I. The King is believed, in the early years of his reign, to have founded a settlement in the parish of persons chiefly of Scottish nationality, and it has been conjectured that at the same time he built the house as a residence or hunting-lodge for himself. Of more weighty evidence is the fact that his arms, mottoes, crest, and initials figure prominently in the room now in the museum, and that the manor of Bromley was in the possession of the Crown about the time of the erection of the building.

The house was altered and partly refitted in the reign of Charles II., and again more extensively about the year 1750, when it was converted into two dwellings, probably for City merchants, many of whom lived in the parish at the time. For about a century, after being divided, the house was occupied as a boarding-school and was known as Palace House School. From 1874 until its destruction, part of the building was used as a club and part finally as a lodging-house, the remainder being occupied by a firm of colour-workers who used the "State Room" as a store. In 1893 the property was acquired by the School Board for London for the purpose of erecting a school, and the building was demolished.

At the time of demolition the "State Room," which was situated on the ground floor at the back of the house, was fitted with a partition, two pinewood doorways, one on either side of the fireplace, three sash-windows, and an inner marble mantelpiece; but these details, which were added in the eighteenth century, did not come into the possession of the museum when the room itself was transferred. As set up for exhibition in the museum, the panelling of the room has been slightly rearranged and parts have been renewed. As we now see it, therefore, the room is a "restoration" and the panelling covers only three sides of the room.

The panelling is of more than ordinary interest from the scheme of grouping of the different panels, a plan which appears to have been otherwise comparatively seldom adopted for wainscoting. It is, as frequently is the case in contemporary work, divided at intervals by pilasters, in this case of the Doric order with plain moulded bases, pedestals, and capitals, the shafts being decorated with strap ornament, elaborately worked in low relief.

The chimney-piece, which is of very elaborate construction, exhibits a marked architectural character. It measures 11 ft. 10 in. in height, reaching almost to the ceiling, and is 9 ft. 6 in. in width. The fireplace has a stone lining with mouldings carved with acanthus and other ornament, and a stone frieze elaborately carved in high relief with birds and monsters amid floral scroll-work. The overmantel is an elaborate composition, perhaps one of the finest specimens of the type consisting essentially of a central panel containing a coat-of-arms, flanked on either side by a niche.

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Of no less interest than the wall treatment of the "State Room" is that of the original plaster ceiling, a work of great richness, planned on a pattern of intersecting squares, quatrefoils, and shaped panels, with eight enriched pendants hanging from the points of intersection of the strapwork ribs, these latter being moulded and adorned with a trailing pattern of fruit and flowers. The arms of King James the First ornament the central quatrefoil panel, and six others bear busts of Joshua, Hector, and Alexander, each twice repeated. The resemblance of these busts to those of several ceilings in Scotland suggests that Scottish craftsmen may have been employed in the building or decoration of the "Old Palace."

From Clifford's Inn, Fleet Street, there has come to the Victoria and Albert Museum another panelled room, constructed between the years 1686 and 1688 for John Penhallow, a Fellow of the Inn. This room is the earliest example in the museum of English panelling of the later Renaissance, and it is interesting to note how very far advance had been made in the purification and closer fidelity to Italian precedents by our English craftsmen from the Renaissance of the beginning of the century as illustrated by such work as was seen in the "Great Palace" of Bromley-by-Bow.

The Clifford's Inn room is panelled in oak, with applied carvings in cedar, which, although elaborate in design and execution, avoid the over-realistic treatment which is usually associated with the school of Grinling Gibbons. The size of the room is 18 ft. 6 in. by 14 ft. 10 in., and 9 ft. 10 in. high. In this small apartment, while one end is principally occupied by the fireplace and the other by a pair of windows, the two longer sides each have two doors, symmetrically arranged. The practicable doors, however, are at the ends of their respective side walls, and it is clear that the others, which are dummies, were introduced as a part of the design to correct the lack of balance which the necessities of the plan of the building imposed upon the designer of the internal decoration. For it must be understood that the panelling of this room was but a part of the furnishing of the chamber allotted to John Penhallow in the Inn. It is interesting to note that the design of the dummy or decorative doors is varied from that of the actual or practicable openings.

These two rooms in the Victoria and Albert Museum form the subject of two separate monographs, in which, for the small sum of sixpence each, may be found the history and description, with photographs, of the various parts, as well as measured drawings by Mr. A. E. Bullock, A.R.I.B.A.

NOTES AND COMMENTS.

EXCEPT for their kindred associations, one cannot regard the conglomeration of the Florence Nightingale and Sidney Herbert statues with the Guards Memorial in Waterloo Place as a successful piece of civic design, whilst the assemblage is rendered simply banal by the inclusion of the lamp-posts.

The grand new highway contemplated by Glasgow as a continuation of the Great Western Road from Anniesland through Duntocher and Bowling is in its form essentially a garden-city road or boulevard. With a central tramway road 40 ft. wide, wheeled-traffic ways 30 ft. wide each side of this, then 13 ft. of turf and trees, and a final 7-foot footway, we have such a thoroughfare as would scarcely have been suggested in Britain but for the garden-city movement. From a practical point of view the proposed road will provide for the extension of one of the main arteries of the city in a manner which indicates an appreciation of the increasing quantity and speed of road traffic. It will provide for cheap tramway travelling facilities for the public in a manner which will ensure increased speed with decreased danger. It will relieve the present congestion and prevent the further congestion of the Dumbarton Road. It will open up the land in a proper manner in the direction in which Glasgow tends to expand. It will render possible by high speed tramways the desire of housing and social reformers to spread the population over wider areas, and prevent the congestion which is common to our tenement system of dwellings, and of which many bad examples exist in our midst. It will further form a connecting link between the great industrial centre and the city's proposed recreation ground at Balloch, and one of the beauty spots of world renown.

A report by the Highways Committee on arterial roads in Greater London was submitted at a meeting of the Middlesex County Council. It was pointed out that Middlesex as a county stood quite unique in regard to its traffic. With the increase in motor traction, and the trend of commercial enterprise in the way of rapid delivery of goods by light cars, by which traffic is diverted from railways, the committee consider that at no distant date the necessity for new roads and widenings of existing thoroughfares in Middlesex would become an acute question. New trunk roads were badly required

(1) From the north to the south and south-western parts of the county.

(2) From Paddington, through Acton and Greenford, to a point to the west of Uxbridge.

(3) From Denham, through Ruislip, Wealdstone, Stanmore, Hendon, Finchley, Friern Barnet, Southgate, Edmonton, and Wanstead (Essex), to the Colchester Road.

The committee felt strongly that the foregoing were the directions in which the want of new arterial roads was most badly felt. It would add much to the appearance of all roads to provide as much open ground as possible, but it had to be borne in mind that the provision of boulevards along roads was an expensive matter, and it was questionable whether or not, considering the climatic conditions of the country, the result of such a provision would justify the outlay. The question of how the cost was to be borne had not been considered up to the present. The committee hoped that town-planning schemes in Middlesex would not be finally settled until the question of new lines of arterial roads was disposed of. The schemes could then be super-imposed on the lines of the suggested roads, and could be made component factors.

Very naïve is the appendix of the committee of the Exeter Diocesan Architectural and Archæological Society to their solemn protest against the wanton destruction of ancient monuments in Belgium, France, and, to a minor extent, in England by the modern Huns. They doubted whether the protest would check the devastation—the Teutonic vandals might never hear of it—but they felt they must record it so that their successors might know they did not pass it over in silence.

Public works of all kinds are, under the stress of war finance, viewed askance by Government, but an excuse of the Fishery Board is really amusing in its ineptitude. At a meeting of Stonehaven Harbour Trustees a letter was read from the Fishery Board in regard to the concreting of the Old Jetty, the Board stating that they were advised that the season was quite unsuitable for the laying of concrete, and that it would be desirable to suspend operations during February and March, and to push on faster with the removal of the coffer dam. This being sent to Mr. Barron, C.E., Aberdeen, the Harbour Board's engineer, he reminded the Trustees that dull, damp weather was the best suited for laying concrete. As the whole season had been, and promised to be, exceptionally open, he saw no reason to suspend the operations, and also that provision was made in the specification regarding the making of concrete during unsuitable weather. He therefore did not think it was in the interests of the Trustees to order the suspension of any part of the works. It was agreed to send the engineer's reply to the Fishery Board.

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In the course of a lecture at Birmingham University, Mr. Barry Parker, speaking against the archæological method of design, made a good point when he claimed that, just as architecture, if it were ever to be a living art again, must evolve forms suited to present-day requirements and present-day methods of building, and not continually be harking back to first one and then another of the catalogued styles, so town-planning, to be a living art, must, while embodying all that the past could teach, before all else meet, logically, present-day conditions and requirements, as well as the special circumstances of the individual case.

WAR ITEMS

IN connection with the campaign undertaken by the Board of Trade, on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and list 9 of articles which inquirers desire to purchase is now ready and may be obtained by United Kingdom manufacturers and traders.

British firms interested, as suppliers, in any of the goods mentioned should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

In accordance with the practice that has been established for H.M. Trade Commissioners in the British self-governing Dominions to visit the United Kingdom officially from time to time, so that manufacturers and merchants may have the opportunity of consulting them on any matters connected with their business, or of obtaining information as to the possibilities of extending their trade, it has been arranged that H.M. Trade Commissioner for Canada (Mr. C. Hamilton Wickes) shall shortly pay an official visit to this country. Among the matters in regard to which he is prepared to give information and advice are the appointment of agents, methods of marketing and distribution, terms of payment, names of probable buyers of British goods, statistics of imports, and rates of Customs duties in Canada. Mr. Hamilton Wickes will attend first at the offices of the Commercial Intelligence Branch of the Board of Trade in order to meet representatives of those firms who may be able to see him in London, and afterwards he will visit such trade and industrial centres in the provinces as it may appear most advantageous to visit in view of applications that may be received from firms in or near those centres, and from Chambers of Commerce.

The United Arts Rifles is a volunteer regiment recruited for home defence from the artistic professions. Many prominent artists, actors, singers, and musicians are members. The force has just moved into new headquarters, the Imperial College Union, in Prince Consort Road, behind the Royal Albert Hall. A matinee concert will be given at the Theatre Royal, Haymarket, on March 26. Mr. Frederick Harrison has kindly given the use of the theatre, and many members and friends are helping. Among them are Mr. Thorpe Bates, Miss Elsie Janis, Mr. Ben Davies, Miss Gertrude Lonsdale, Mr. Harry Tate, Mr. Plunket Greene, Mr. Harry Dearth, Miss Marie Lohr, Mr. Basil Hallam, Mr. Fred Wright, Mr. Godfrey Tearle, Mr. Nelson Keys, Mr. Hayden Coffin, Mr. Arthur Bourchier, Miss Violet Vanbrugh, Miss Marie Lloyd, Mr. Howard Jones, Sir Arthur Pinero, Miss Muriel Foster, Mr. Donald Calthrop. With such a list success is assured.

ILLUSTRATIONS.

R.M.S. "AQUITANIA."

OUR illustrations this week give only a bare idea of the sumptuous fitting of the Cunard liner *Aquitania* as carried out from the designs of Messrs. Mewes & Davis.

The restaurant or saloon in the first-class accommodation measures nearly 150 ft. in length and 100 ft. in width; the height at the sides is 10 ft., and in the centre, where there is a large well 41 ft. by 23 ft., the room attains a height of 19 ft.; the floor area is 13,500 square feet. The decoration is in the Louis XVI. style, and the woodwork is in panelled mahogany and painted grey, the whole being enriched with carved ornament, and a beautiful arrangement of pilasters and columns in stuc marble *jaune de Sienna*. The capitals and bases of the columns and pilasters are of the Ionic order.

Between the pilasters and on the panels of the vents decorative paintings of various sizes are hung. Twenty of these are after arabesques by Prieur, a famous decorator of the Louis XVI. period (1774-1789), supporting *Salles* decorated with bas reliefs in *grisaille*, inspired by the works of Clodian and Huet, masters of the eighteenth century.

Two grand decorative paintings, fore and aft of the funnel casings in the centre of the ship, are hung above two majestic sidetables with marble tops. The foregrounds of these paintings represent Ionic architecture, decorated with garlands of flowers and attributes, through which are seen perspective views of landscapes taken from the parks of the Grand and Petit Trianons at Versailles. Four lesser panels are found at each side of the funnel casings; these represent other views in the same parks.

In the great ceiling of the well is a decorative painting forming a grand central portion, representing the triumph of Flora. Flora, on the highest clouds of a radiant sky, is receiving the tributes of the other goddesses, eager to assert her triumph. Pomona, with a brotherly action, takes her hand and adorns her breast with a branch of apple blossom. Ceres offers her a bouquet of wild flowers, while young lovers weave a garland of roses. Cupid, with a flourish of his wings, carries to her the crown which is to perpetuate her glory.

This subject is framed by four fine ecoinsons, composed of brûle parfums, arabesques, and garlands of flowers and fruit, and at each extremity of the ceiling are two circular portions, bound by a border representing a spray of roses.

On the transverse bulkhead are chimeras of women's heads. All the ornamentation, wreaths, garlands, &c., are inspired by the best masters of the eighteenth century. The well is surrounded by a rich wrought iron balustrading, with motifs forming panels representing the monogram of the company and of the ship, with two anchors crossed on a trident, symbolical of Neptune, the god of the seas. The carpet of the restaurant is blue. The furniture is of satinwood, the coverings being of blue ground silk with chints colours. The curtains are of yellow moirée.

The general idea in the first-class smoking-room has been to retain a ship effect with architectural propositions. It is an adaptation from Greenwich Hospital, the period being late Charles II. The panelling is of solid oak. The chimney-piece, with its marble surround and carved ornaments, is a typical adaptation of the work of the period. The plan of the room generally is interesting. It is 76 ft. long and 52 ft. wide, with a lofty central portion and fine spacious rooms adjoining, divided off by glazed and panelled partitions, with oak carvings of nautical trophies and draperies. On all sides will be seen carved trophies and coats of arms, which are both varied and interesting. They are in the earlier manner of Grinling Gibbons and embody the typical nautical attributes frequently used by him. To retain the robust character associated with the "Wooden Walls" of England, much of the carving has been executed out of the solid oak. The more important features, however, such as the large drops of carving on the chimney-piece, have been executed in limewood and applied upon the darker oak ground.

The trophies of arms in the windows contain shields of the various heraldic devices of the principal British ports executed in the correct colouring. The carved and gilded sconces, discreetly apportioned to the several compartments of the room, are specially designed to harmonise with both the period and the nautical tone of the whole scheme. The massive silver andirons are faithful reproductions of the original examples existing at Knole. The floor is composed of oak deck boards of random widths, as used in old men-of-

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war. The central portion is covered with a fine old hand-made carpet of Persian design.

In the centre of the high portion of the room are two large decorative painted panels, in richly carved old gold frames. These are after Claude (Gelée Lorrain) and represent the "Embarkation of St. Ursula," and a "Seaport with Figures." The originals of these are in the National Gallery. Over the mantelpiece is a fine portrait of James I. The lower portions of the room, adjoining the central hall, have a rich oak beamed ceiling, and the window treatment suggests the admiral's walk on an old battleship. Most of the carved trophies and details there have been copied from old ships at Greenwich, notably the *Sovraigne of the Seas*, built at Woolwich in 1637, and the largest ship of her period. She is said to have been designed only for splendour and magnificence, her bulwarks being covered with carved and ornamental trophies in panels. The electric light fittings in this portion of the room are copied from a design of an old Dutch ship lantern. The whole of the panelling has been toned down to an antique mellow hue.

The chairs and settees are in English walnut, being reproductions of old models of the period, and covered with "Petit Point" tapestry. In the centre of the room are two remarkable carved console tables with marble tops.

The general scheme of decoration which has been chosen for the first-class lounge is that in vogue about the time of George I., and is reminiscent of the work of Sir Christopher Wren. The colour scheme is wine red and vellum. The columns and entablature support a wagon-headed ceiling, which is embellished with plaster work of the latter half of the seventeenth century, the details being in each case from original models. The centre of the room, which is 18 ft. in height, is ornamented with a genuine old ceiling painting on canvas, representing an allegorical subject, and signed by Van Cuygen, a well-known decorative painter of the Dutch school. It will be interesting to note that this undoubted work of art was removed in its entirety from a house of the period. The room has large Georgian windows overlooking the garden lounge. The spandrels at the end of the room, on each side of the arches, are copied from old panels representing the elements, "Fire," "Earth," "Water," and "Heavens," after Jean Baptiste Van Lee, 1684-1745. The lunettes in the cove above the cornice are fitted with wrought iron grilles copied from old models, evidently inspired from the work of Jean Baptiste Tijou, the world-famous artist-craftsman of the time.

The carvings surrounding the picture over the chimney-piece and niches are of limewood. They are fine examples of modern work, each swag and pendant being actually carved out of one block of wood without joints. These carvings, which represent marine attributes, were copied from genuine examples by Grinling Gibbons (1648-1721), who founded the great school of English woodcarvers in the seventeenth century, and whose work, both for delicacy of execution and technique, remains unsurpassed. The finely moulded marble jambs surrounding the fireplace opening are of rare and beautifully figured "Breccia Africain" marble.

A semi-circular stage or platform is planned at one end of the room, decorated with a fine coffered vault, under which is a reproduction of the famous tapestry representing the Battle of Solebay. This is a Mortlake tapestry, and the original is in the Prince of Wales' bedroom at Hampton Court Palace. The tapestry in question provides a good illustration of the battle, and shows the position of the allied fleets at dawn, moored in a curve parallel to the coast-line, in which may be seen the village of Southwold. To the north are the English squadrons under the Earl of Sandwich; in the foreground lie the French vessels under d'Estrees and Duquesne. To the right is the rising sun, and west of it is the Dutch fleet. After twelve hours of stubborn combat the battle ceased, each side claiming the victory. The ceiling is lit by a hidden electric lamp, two fine carved alabaster dishes, and a number of graceful fittings composed of crystal shells and motifs suggesting the sea. The floor is of oak and suitable for dancing. It is covered with plum-coloured trellis carpet, the centre being a replica of a fine Savonnerie example. The furniture is composed of reproductions of some of the best examples of the period, covered with needlework tapestry, Genoa velvets, and rich brocades. The long gallery stretches for nearly 150 feet—from the first-class smoking-room to the lounge. On the port side large sash windows overlook the deck promenade and the sea. The walls are panelled in mahogany and are painted a delicate eau-de-nil. The whole is reminiscent. The period of decoration is about 1780 and the black and grey tiling of the floor harmonises admirably.

This gallery or arcade is essentially a place where passengers may promenade, or rather stroll, for its beauties are so varied that leisure is necessary to examine them. Prominent amongst its features are the vitrines or show-cases, which contain exhibits of jewellery, china, lace-work, prints, and other objects of art. These, in themselves, would be of sufficient interest to establish the unique character of the gallery. But just as vital to the scheme are the magnificent prints which adorn the walls, making it not only a gallery of art, but one of history as well. Particularly appropriate are the old prints of English seaports in the early part of the eighteenth century. Liverpool, the birthplace of transatlantic steam navigation; Deptford, where the "goodlie shippes" of the sixteenth and seventeenth centuries were built; Greenwich, with its Royal Hospital for Seamen; Plymouth, one of whose indissoluble links with the new world is the *Mayflower*; Bristol, the home of Sebastian Cabot, and of William Penn's father; and Harwich, which witnessed the stirring scenes of the Dutch Wars.

The more personal side of eighteenth-century history is represented by the admirable series of engraved portraits, such as that of Prince William Henry, third son of George III., who visited New York in 1781-82; that of Nelson, the international sea-hero; and those of Handel, Samuel Foote, David Garrick, John Kemble, and Edmund Kean, whose art knew neither the bounds of time nor space.

LEEDS AND WEST YORKSHIRE ARCHITECTURAL SOCIETY.

A GENERAL meeting of the above Society was held at the Leeds Institute, Cookridge Street, on Thursday, February 18, when a paper on "Wren" was given by Mr. J. H. Farrar, A.R.C.A. (Lond.), illustrated with lantern slides. The President (Mr. G. Fredk. Bowman) occupied the chair, and there was a good attendance of members.

The lecturer, in the course of his remarks, dealt rather upon Wren's personality and his place in history than the range and quality of his works.

Members of the Wren family had served in spiritual and temporal offices to the Crown as early as 1500. Matthew Wren, Lord Bishop of Ely, and his brother Christopher, father of the immortal Sir Christopher, both suffered persecution at the hands of the Long Parliament, Bishop Matthew being confined in the Tower of London for eighteen years until the Restoration. It was for this same Matthew Wren, as President of Pembroke Hall, Cambridge, that Christopher carried out his first architectural work—the new chapel there. He was then over thirty years of age. Up to this time he had applied himself chiefly to scientific pursuits, having been Professor of Astronomy at Gresham College, London, and at the University of Oxford. He was skilled in mathematics, and a prolific inventor. It was during the year of the Plague that Wren made his only visit to the Continent, when he journeyed to Paris to a Congress of Arts. Here he met Bernini, who was at work upon the Louvre, and Mansart and Perrot. After a stay of six months he returned to England, and in the following year the Great Fire swept away the mediæval town of London and presented to Wren the opportunity for the creation of a new and beautiful city.

Unfortunately, the parsimony and stupidity of those under whom he had to work prevented most of his dreams from complete realisation; but, despite his limitations, by skill and forethought he converted London from a stuffy, plague-ridden city of the Middle Ages to an airy, modern town of brick and stone.

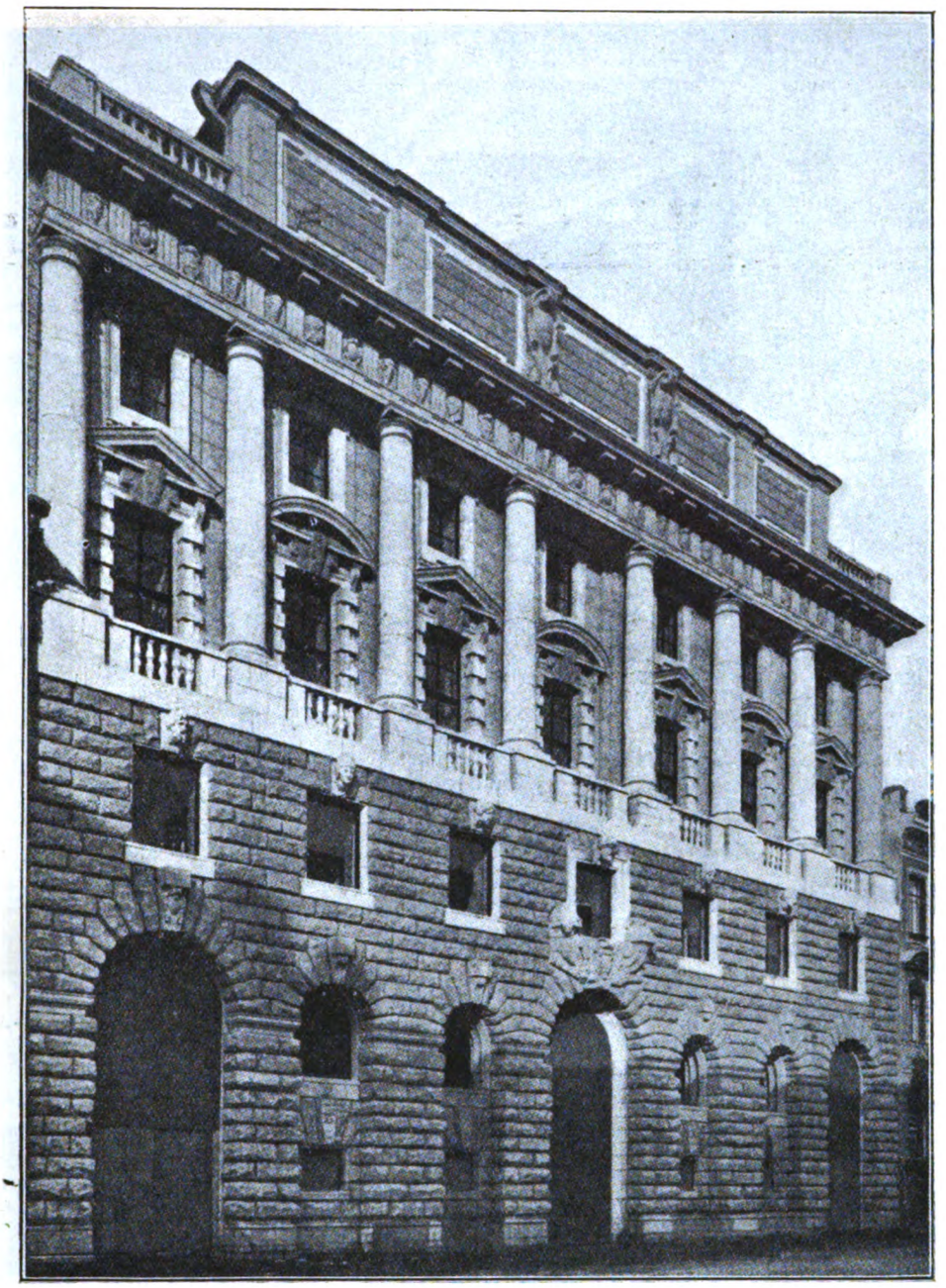
The lecturer went on to analyse the details of Wren's great task, more particularly with regard to the controversy as to what was to be done with the gutted St. Paul's; how he triumphed eventually over his critics, and completed his new church within forty-five years from the date of the Fire.

Wren's last five years were spent in quiet retirement at his house, near Hampton Court, where he died, after a short illness, at the age of ninety-one.

A vote of thanks was accorded to the lecturer on the motion of Mr. W. G. Smithson, A.R.I.B.A., seconded by Mr. J. G. Coombs, A.R.C.A., and carried.

At the conclusion of the lecture Mr. Bowman presented Mr. Farrar with a silver tea-service from the members of the Sketching Club on the occasion of his recent marriage.

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PETROGRAD.—THE RUSSIAN COMMERCIAL AND INDUSTRIAL BANK.—M. PERETIATKOVITCH, Architect.

NEO-CLASSICISM IN RUSSIA.

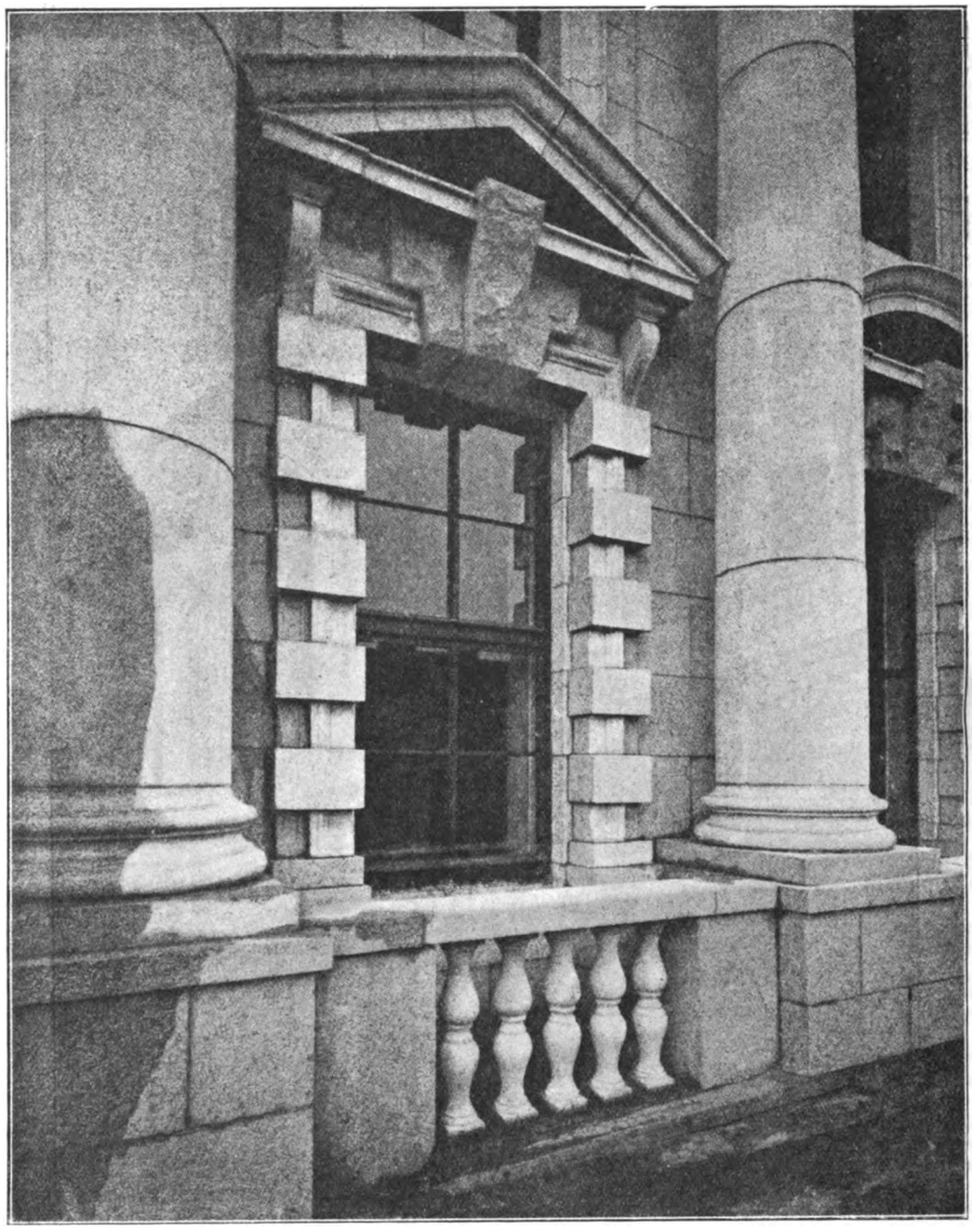
THE revival of the classical style in modern architecture may appear little short of a paradox. We hear it so often denounced as an obsolete relic of the past retaining its pernicious hold over the present only by reason of our æsthetic apathy and conservatism. And side by side with these denunciations we see many present-day erections, modern to the last degree in their purpose and character, which find their most fitting expression in this same classical style notwithstanding all its proclaimed obsoleteness. Obviously there must be something wrong with these sweeping criticisms, and it may be that the obsolete is not so obsolete and the modern not so modern. Whatever is the truth, the opinion of M. Loukomsky, the gifted Russian critic of architecture, merits our special attention in this connection, for not only is he a lover of classicism, but he even believes that it is actually the only form fully answering the requirements of modern architecture.

In his second article in the "Apollon" on the latest architectural developments in Petrograd (his first article was reviewed in these pages last year) he emphasises the fact that, whilst painting and sculpture show a marked tendency to break off the traditions of the past, architecture, after its brief wanderings in the fanciful world of the "new-art" style, has come back to its favourite forms of the classical tradition. This statement seems to be fully borne out by the sequence of architectural movements in Petrograd during the last decade.

The first signs of reaction in Russia against the "new-art" and towards the "classical" manifested themselves in the revival of the "Empire" style. This was soon followed by the influence of the late Italian Renaissance, to come finally under the sway of the Early Renaissance and, partly, of the ancient Greek. The numerous erections of last year, reviewed by M. Loukomsky, are fairly representative of these various tendencies.

Perhaps the most characteristic building amongst them all is the Russian Commercial and Industrial Bank, designed by M. Peretiatkovitch. It has a heavily rusticated plinth and first storey, carrying a light colonnade of the Doric order which supports an elaborately modelled cornice. The three elongated arches in the plinth serving as entrances do not lack in accent, though, on the other hand, the arched windows seem to be so small as to produce a dwarfing effect. The design of the windows of the third floor with their quoined mouldings is rather uncommon in Russia, and it is curious to note that it called forth some criticisms charging the architect with borrowing the *motif* from a building standing opposite the Bank. Of course, the truth of the matter is that this design is one of the stock *motifs* not

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PETROGRAD.—DETAIL FROM THE RUSSIAN COMMERCIAL AND INDUSTRIAL BANK.—M. PEBETIATKOVITCH, Architect.

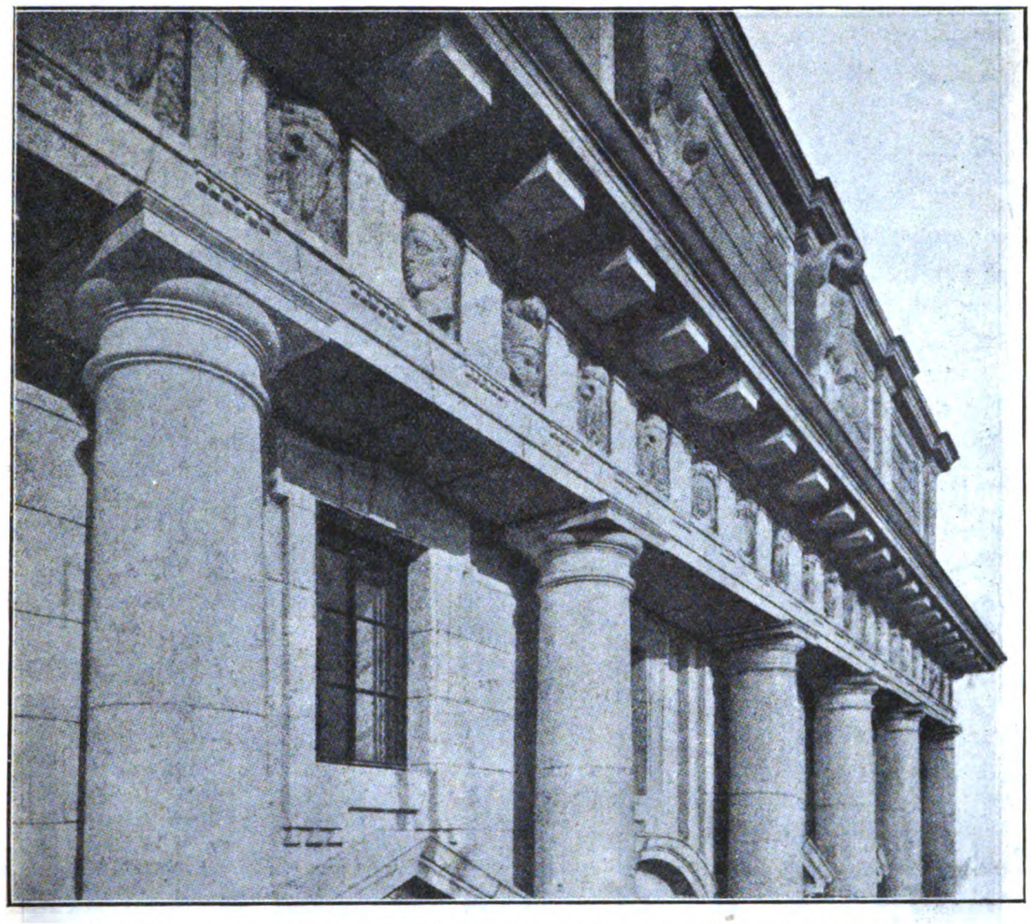
unfrequently employed by the builders of the Early Italian Renaissance and is well known in this country also. The effect of dignity and grandeur obviously aimed at by the heavy rustication of the basement is somewhat marred by the fact that the building is in a line with other houses in a narrow street and consequently stands too close for the passer-by to get a general view of it. Owing to the same factor the proportions of the upper part, and of the colonnade in particular, lose considerably through being seen in sharp perspective. Obviously to remedy this effect the architect imparted an added emphasis to the cornice, which is magnificently worked out, with beautiful sculptured metopes in the frieze.

Another example of the classical tendency is supplied by the detached private house designed by M. L. Ilhin. The building retains some familiar features of the Russian Empire style, particularly in its wall ornaments, but otherwise it is essentially Palladian, though coloured with the homely character which is so peculiar to the old Russian country houses. Its details are finely worked out (*e.g.*, the composite order of the capitals), whilst what may at first appear as a discordant element breaking the unity of the design, viz., the left wing, on further examination appears to accentuate the residential character of the building, softening down the solemnity of its portico.

Of the other buildings reviewed by M. Loukomsky we give here illustrations of the more interesting. The house designed by M. Niedermeier is a pleasing example of the use of classical forms, though it is less original than the two houses just described. Through its two bottom storeys there runs an arcade in the Doric order, whilst the upper part is treated in the Baroque style. Perhaps the combination is not one of the happiest, but nevertheless the calm dignity of the whole, which is partly due to the unusual reserve of the Baroque of the upper storeys, gives one the impression of power and individuality.

More faithful in its classicism is M. Rosenstein's house, designed by M. Bielogrud. It is full of Palladian forms, amongst which the most striking is the *motif* of a broken-up cornice making room for an extra storey. This *motif* was used by Palladio in his Casa del Diabolo in Vicenza, and was only recently applied in Russia by M. Stchuko in the magnificent house in Kameno-ostrovsky Prospect, a photograph of which was reproduced in these pages last year. Another feature of interest in the house designed by M. Bielogrud is the prominence given to its sculptural ornamentation. A number of statues on the top of the attic storey and the archaic sculpture in the frieze, running on the level with the richly modelled composite capitals, give credit to M. Rasoumovsky, their author, and may be regarded as one of numerous examples of the reviving in Russia of interest in sculpture as an architectural form.

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PETROGRAD.—DETAIL FROM THE RUSSIAN COMMERCIAL AND INDUSTRIAL BANK.—M. Peretiatkovitch, Architect.

Quite by itself, distinct from the above classical buildings, stands the house designed by M. Lialevitch. It has an imposing front boldly divided into parts by a pediment of original design. The two statues crowning the entablature are placed in well chosen positions, and the frieze crowning the rusticated storeys adds to the generally pleasing effect produced by the building.

ROYAL ACADEMY LECTURES: ARCHITECTURE.—III.

The third of the four lectures on "The Thousand Years of the Flemish Arts," which Professor E. S. Prior, M.A., A.R.A. concluded last week before the students of the Royal Academy, was concerned with

THE ARTS AND CRAFTS OF THE FLEMISH RENAISSANCE.

In his first lecture, describing the Romanesque Arts of the Low Countries, Professor Prior had mentioned their descent from the Carlovingian craft schools. The twelfth and thirteenth century metal-workers of Dinant and Tournai, with bronze fonts, bronze sepulchral slabs, and with their magnificent coffer chests, joined with the marble sculptors of Tournai in handing on to Flemish style a traditional capacity for a trade in the object-works of the imager and goldsmith. Both by reason of its efficient crafts of marbler and metal-worker, and by having at hand the materials for splendid and showy work, the Flemish country could supply elaborate tombs, screens, and retables; and, indeed, no other European country, except Italy, could compete in such things with the Low Countries. Towards the end of the fourteenth century the remarkable fact appears that in many of the great centres of European civilisation the records of cathedrals and churches disclose the names of Flemish masters as employed on works of important sculpture. For instance, the effigy in Westminster Abbey of Edward III.'s Queen Phillippa was sculptured by Hawkin of Liège. At Narbonne, close to the Pyrenees, as well as at Abbeville in Normandy, at Troyes, and in Paris itself there are similar records of Flemish artists.

Dijon, the native capital of the Dukes of Burgundy, is famous as the site of the most celebrated monuments by which the era of Flemish style was heralded. Here it was that c. 1400 Flemish art created a new Gothic style that became of wide decorative use throughout North Europe in the works of men like Claus or Nicolas Sluter. The size and the bold modelling of its sculpture and the sumptuous use of black-and-white marbles are altogether foreign to English style, as they are to French. Another form of rich monumental stone furniture in which the quality of Flemish style declared itself was the wall-monument enriched with individual sculpture.

The elaborate sculpture was of many kinds in the architectural compositions with which the Flemish furnished their churches. In their bold magnificence of scale and their lavishness of figure-work these Flemish stone pieces of the fifteenth century surpass all other examples of mediæval church furniture of the date that have come down to us. It is when such pieces remain in their original stations in the churches for which they were made that their effect as art is so telling. A great deal of the fifteenth-century furniture has of course perished. But till this year splendid pieces remained in the churches at Hal, Lèau, and St. Peter and St. James at Louvain.

At Lierre was one of the most exquisite of these screens, executed in white stone, suited for the delicate carving. The black marbles of the Ardennes were employed for the columns—one of the earliest uses of the natural colour in architectural compositions. These elaborate chancel screens came into use during the second half of the fifteenth century. As in our cathedrals, the common use of these rood lofts was as the station for the music of the choir and services. This instrumental music in the sixteenth and seventeenth centuries gave place to the organ, so that rood-loft screens ordinarily became organ-lofts in the sixteenth century. Such picturesque erections enhance enormously the effects of architecture: they give perspective. There were remaining till this year six splendid examples—Louvain, Lierre, Aerschot, Dixmude, Tessenderloo, and Walcourt.

The chapel screens were works of similar picturesque luxury, whether in painted wood or wood and bronze.

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DETACHED HOUSE IN PETROGRAD.—M. L. ILHIN, Architect.

They have been wrought, fretted, chased, and polished, all combining by their natural colourings to produce those warm, rich textures which are the arts and crafts equivalent of the splendour of painting. The screens had their counterpart in the splendid domestic pieces of internal decoration in which wood, stone, and metal combine. The Flemish chimney-pieces, the enriched doorways, and the panelled ceilings make compositions of peculiar beauty.

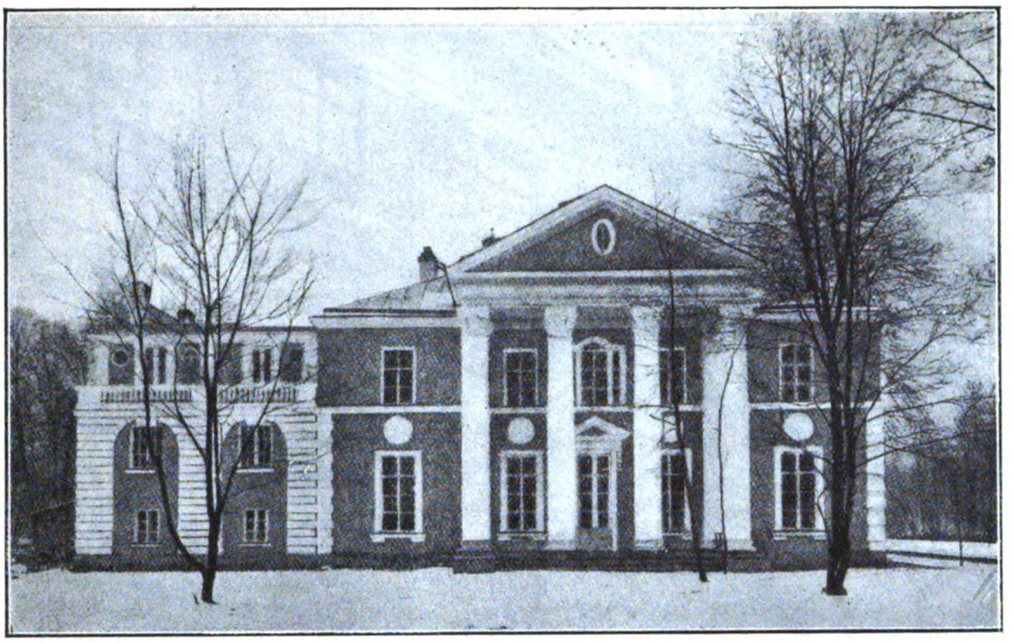
The sculpture of pictures in stone and marble was echoed in wood. In the Flemish wood-carving artists there practised some of the most accomplished craftsmen that the world has produced. Indeed, wood made a material in which the peculiarly Flemish character of its fifteenth-century figure art was exhibited. Oak and walnut were used for the elaborate carving of scenes of pictorial relief backed by architectural ornament, traceries, canopies, and all the varieties of tabernacle work, and framed up into great erections of monumental effect.

As picturesque composition, relying on the intricate play of decorated line, on the glitter of varied surfaces, and the interest of complicated effects, the arts of the Antwerp retable-makers captivated Northern taste; and of all the Flemish productions their story-telling retables had probably the widest diffusion. What was in competition with it in the early years of the fifteenth century was the English alabaster retable which in rivalry developed as an erection of many tiers, but never succeeded in giving the same luxuriant fulness of design as the Flemish productions. By the end of the fifteenth century the Flemish wood retable had ousted from European commerce the English alabaster make.

The decay of the English church arts of sculpture was consummated by the English Reformation. On the other hand, the middle of the sixteenth century became the culminating period of the Flemish commerce in church furnitures of all kinds. They were taken to all Catholic countries and spread the Flemish style all over Northern Europe. The skill of the wood-carvers and their conception of bold and splendid decoration has a wonderful example which exhibits its beauties on two faces in the wood pendant hung in the church of St. Gertrude at Lèau. It is 10 feet high and is suspended in the middle of the nave.

Accompanying this architectural woodwork there was a large amount of portable furniture—both important pieces of ecclesiastical use and also domestic furniture in the houses of princes and great merchants of the fifteenth century, whose wealth and display equalled that of the princes. Flemish furniture set a style to the house-wrights of Northern Europe. They introduced the joiners' habit of panelling rooms, and so initiated a style of domestic decoration that only after a long interval succumbed to Palladian influences. The richness of the wood ornament is echoed in the most beautiful ironwork of the lock plates and hinges. Indeed, combinations of woodwork and metal-work in one composition produced the most picturesque effects in Flemish churches in the chapel and chancel enclosures and the many screens and partitions. Both bronze and iron are used in architectural display, but also for great pieces of metal furniture. The most famous are the fonts at Hal, Louvain, Diest, and Ypres. Continuing the arts of the twelfth and thirteenth centuries, we have in the fourteenth century the great bird lecterns, the earliest

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DETACHED HOUSE IN PETROGRAD.—M. L. ILHIN, Architect.

of which is said to be that at Aix-la-Chapelle. There remain in many churches splendid examples of fifteenth-century bronze and copper work in fonts, lecterns, and church candlesticks.

A distinct crisis in the arts was occasioned by the wars of religion. The dividing line is marked by the departure of Philip of Spain in 1550 in dudgeon at the turbulence of his Flemish inheritance. That turbulence culminated in the iconoclastic riots of 1566 which assailed the churches of Flanders. There followed the reprisals on the Calvinists by the Spanish Governor, the Duke of Alva. In the five-and-twenty years of these tumults a very large part of the splendid fifteenth and early sixteenth century monuments and screens in the Flemish churches were destroyed. And when in 1579 was achieved the separation of the seven provinces by the Union of Utrecht the Protestant population of that part of the Low Countries which we now call Holland developed a national art outside the Catholic southern provinces which remained under the dominion of Spain. But in the southern provinces, which are those we now call Belgium, there was a renewal of Flemish prosperity. The new generation had in the interval discovered new principles of decorative design.

Towards the end of the sixteenth century pageant designs and the patterns of decorative objects, which were published in books, aimed at a fresh standard. The modelling of furniture began to be divorced from construction and relied for effect on an arbitrary feature of design. The outstanding and conspicuous sign by which we may identify the control of Flemish art passing into the hands of the Renaissance sculptor was the adoption of those settings and accessories of sculpture which we know as Classic.

The most continuous output of the sculptor-shops were concerned with the monuments to the dead. In these competition between various makers and the sculptor-shops of various cities tended to an easy Italianising of detail. In the great marble altar tombs Flemish style is most assertive of its own genius. The wood carvers were not behind the marble sculptors in exploiting Renaissance detail for great pieces of furniture. Of all wood sculpture the organ cases seem the most ambitious, comparable in elaboration and scale to the tabernacles of the marble sculptors. In its less ambitious enterprises the wood craftsmanship of the middle of the sixteenth century had a refinement and simplicity of treatment that exhibits furniture makers more as constructive artists than competitors of the marble sculptors. Well on into the seventeenth century we recognise in the internal fittings of the great houses the same quality of artistic craftsmanship. Much Flemish furniture is to be dated to this first Renaissance of wood design, in which the Renaissance ornaments replace the Gothic traceries, but they are carried out on a craftsman's system of enriching but not disguising construction.

The Catholic art of the counter-Reformation in North Europe owed its effective power to the necessity imposed on it of being in immediate contact with the Roman art of Italy—the art that was Roman in being papal and Roman, too, in being classical. In this conjunction were effected those fusions of Catholic sentiment with classical forms that lasted as the expression of European art for three centuries, dominating even the Protestant idiosyncrasies. It was the Catholic competence of this fusion that endowed so splendidly the Jesuit architecture in Flanders. In Italy and Spain churches have a full representation of this Baroque furniture and decoration of the seventeenth and eighteenth centuries. But north of the Alps and the Pyrenees there are no such displays so picturesque and boldly conceived as in the Flemish churches.

Though plainly scenic in its intention, the art of the early seventeenth century shows often great propriety of composition, and is always wonderfully happy in its choice of decorated materials. But later sculpture and ornament were to grow apart from one another.

The characteristic qualities of the eighteenth century developed in the Flemish wood sculptors as can be seen in the great carved pulpits, which, though constructed of wood, are more wanting in sense of constructive carpentry than any woodwork on such a scale in the world. These pulpits are to be found at Bruges, Antwerp and Louvain, Brussels and Ghent. Of the two at Antwerp, that at St. Andrew's, representing the calling of St. Peter and St. Andrew, is the latest, about 1760; and as far as the imitative pictorial sculpture can go is of extraordinary spirit and vivacity.

THE RESTORATION OF WESTMINSTER HALL.

THE restoration of Westminster Hall was raised in the House of Commons on Thursday last week on the vote of supply.

Mr. King, who said he wished to call attention to a matter of immense importance, said: A policy is about to be started which, I am quite certain, if put through, will give a great amount of offence to the best judges and cause deep regret for many years to come. The roof of Westminster Hall is, as we have been aware for ten months, in a condition that needs repair. I do not for a moment question the necessity of doing something very extensive in its operation to the roof of this great hall, but I specially want the members of the House to realise that the most sacred secular building in the whole of our history, and I therefore think in the history of the world, is going to be radically changed and altogether altered as a structure, and there has been no debate in the House on this important matter since April 23 last. On that date there was a debate, it is true, but it was a debate on the Vote for the Houses of Parliament. It began after half-past

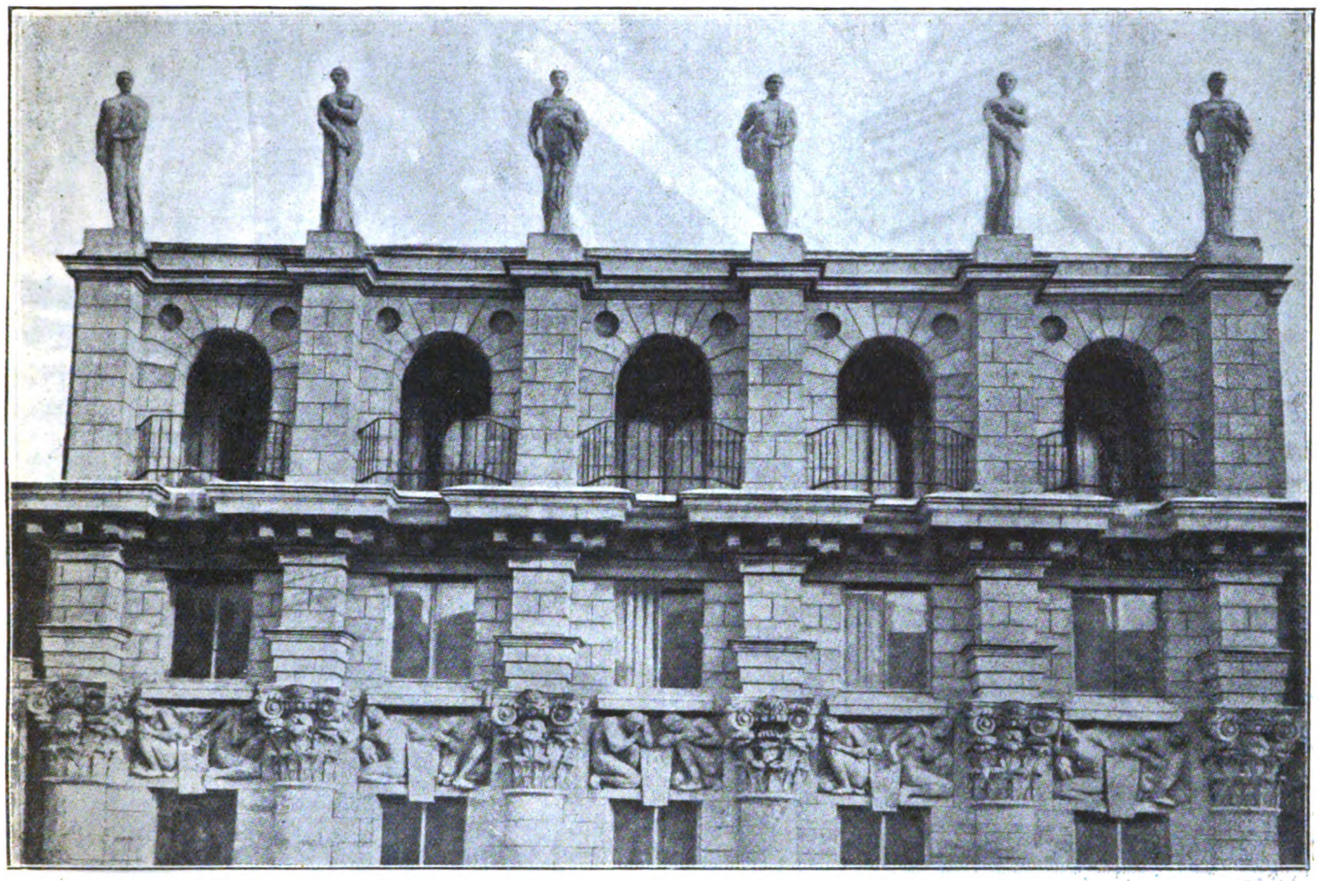
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PETROGRAD.—M. KALMEIER'S DIVIDEND HOUSE.—M. A. NIEDERMEIER, Architect.

seven, and it was interrupted by a Private Bill, which took nearly the whole of the evening. The discussion, therefore, was most inadequate, and admitted of nothing but one long speech from Mr. Wedgwood Benn. It is a very curious thing that in this debate the plan of the Government was enunciated, and it was not until more than two months afterwards that the report upon their investigations of the actual proposals of the Government was given. The House is therefore asked to consider itself as having debated a subject on April 23 which was only laid before it on June 13. When the report was laid before the House a request was at once made to the Prime Minister that a day should be given for the discussion. Before a definite answer was given Mr. Wedgwood Benn announced on June 25, less than a fortnight after the report was issued, that the whole of the recommendations were being adopted, and that therefore there was to be no discussion of them by the House. I want to call the attention of the House that the gentlemen on the Treasury Bench have not treated us fairly. If it had not been that this report was published only just before the extremely exciting time of party conflict, and the threat of public riot and revolution which we had at the end of June and in July, and if that had not been followed by the outbreak of the war, there would be by this time an overwhelming body of public opinion against this report and the proposals. I am certain we should have had by this time a Committee of Inquiry and counter proposals, and I am confident we should have had a different solution of the problem of this roof at very much less public expense. If the Government will allow a committee to be appointed to look into this report, examine witnesses, and report again before the actual structural work was taken in hand I should be satisfied, and I am confident that the result would be that we should have a different roof from the extravagant and outrageous proposal that is being made. What is the recommendation of this report, and what are my objections to it? I hope that if we cannot get a committee or further inquiry we shall, at any rate, get an opportunity when the whole matter can be discussed. I hope the hon. member who is to reply will undertake that the work of vital and decisive character will be kept back until after that discussion. If he gives that undertaking I shall be satisfied. I admit that the roof needs repair, but the proposal is to put up a huge iron structure from which the existing roof will be more or less suspended, so that the roof, as we shall see it, will not be the structural roof at all, but pieces of timber repaired by new timber; but it will not carry the weight of the roof,

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PETROGRAD.—DETAIL FROM M. ROSENSTEIN'S HOUSE.—M. A. BIELOGRUD, Architect.

and it will not support the slates or whatever may be the material adopted. It will be a structural sham. It will be no more the real roof of the building, but only a certain number of ancient timbers. I object altogether to a great historical building, probably the noblest Gothic building in the world, being treated in that way, and I object to advantage being taken of this war to commit an act of artistic vandalism. The first point I want to raise is that opinions have been strongly expressed against this report from different points of view. The report of Mr. Baines—I do not wish to say anything disrespectful of him, for he is a friend of many members, and he is a very capable man with regard to the actual construction and power of an iron roof; as an architectural engineer he is, no doubt, an excellent and first-rate authority, and I do not doubt that the roof he proposes to put up will be strong enough. If we are to have an iron roof from which the present timbers will be suspended, I am willing to agree that Mr. Baines will carry it out very well. Some men of science have already expressed doubt of the wisdom of this course. I have a letter from Professor Stebbing, of Edinburgh University. He is Professor of Forestry in that university, and he is a great authority not only on timber, but on the ravages of insects on timber. I wish to refer also to the fact that the hon. member for Cambridge University has expressed in the *Times* that further inquiry and discussion are necessary before this work is undertaken. These are only two men of science I could quote. This is not an ecclesiastical building, but it is the greatest building of a secular character in London. I will quote Mr. Lynam, who is one of the best-known antiquarian architects. He says:—

"This is vandalism, and we ought to draw our swords against the vandals as against the Huns."

That shows he feels pretty strongly about it. I have a communication from Mr. Caroe, the architect to the Ecclesiastical Commissioners, who has been connected with the repair of most of the cathedrals of the kingdom. He knows the subject of these great Gothic roofs better than any other architect in the kingdom. He has not been consulted. There was no attempt to approach him in connection with the Office of Works. If we had a committee we should be able to approach men who know the subject. Mr. Caroe was articled to Mr. Pearce, who placed the roof of Westminster Hall in its present condition. He was, for seven months, every day on the scaffolding of this roof, and he has had an experience of the roof which is absolutely unique. He was never asked a single question on the subject. That shows how the Office of Works goes to work. It simply blunders through its officials. Engineering opinion is not favourable to the making of Westminster Hall a great work of engineering, rather than of architecture. I wish to quote what the "Practical Engineer" said only in its last issue:—

"It is now intended to practically build a new roof of steel girders behind the wood and out of sight. For the authors of this proposal some term stronger than semi-criminal is required. Better a naked and unashamed steel roof than the imposture which has been decided upon."

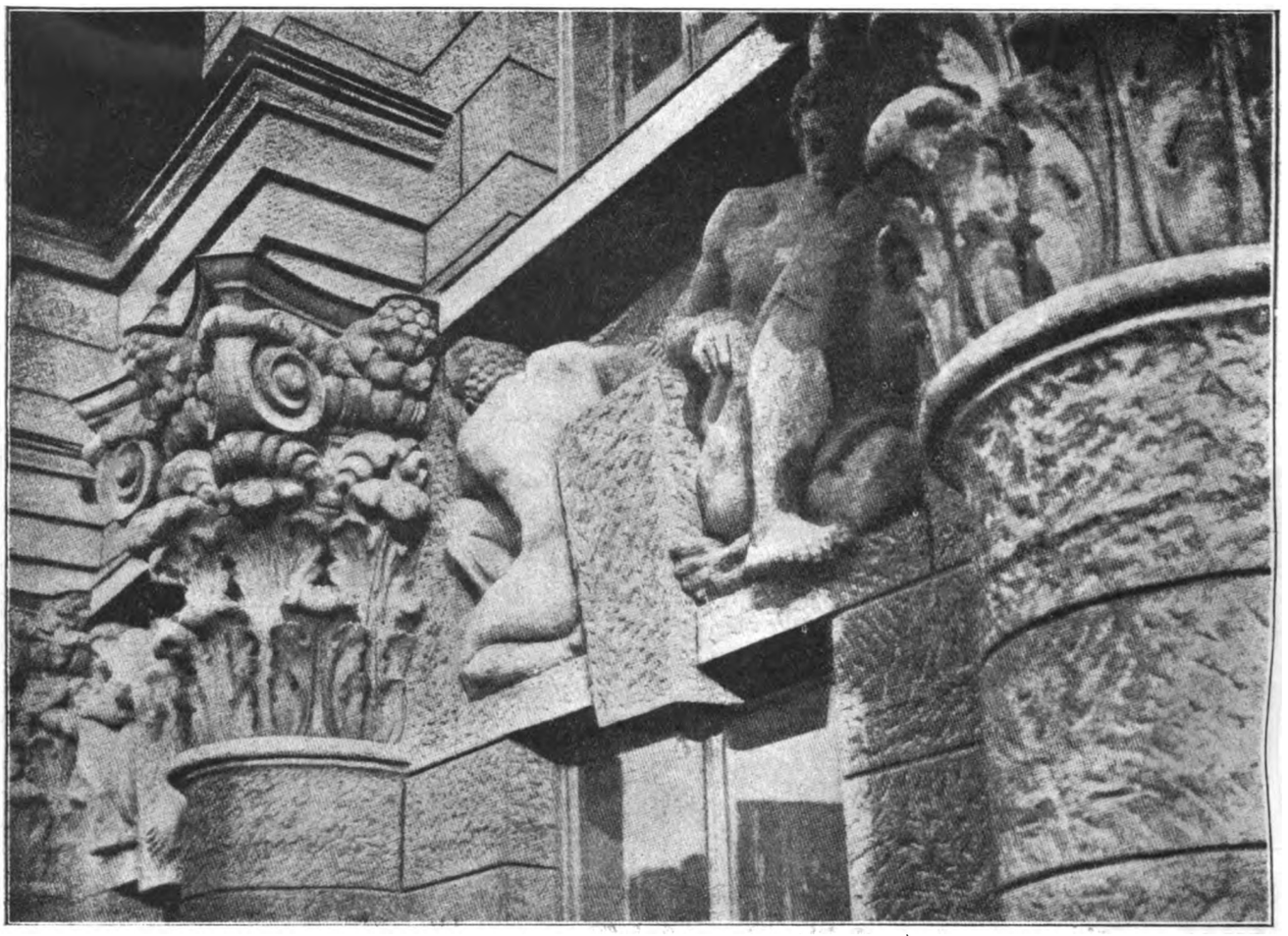
I am going to quote a practical man—the House is full of them now. I suppose the practical man who knows more about these great timber roofs than any other is Mr. Gaymer, of Messrs. Cornish & Gaymer, the firm who are now reconstructing Durham and Canterbury Cathedrals. They have enormous stocks of old timbers, and they are one of the two or three firms who undertake such work as the reconstruction and repair of our great cathedral roofs. Mr. Gaymer was engaged as a young man some years ago in connection with Westminster Hall, and his firm have made an estimate of the cost. Mr. Gaymer has made a firm offer that he would do the work for £49,500.

Mr. MacVeagh: Would he do it on commission?

Mr. King: It is a firm estimate—not on commission. The proposal of Mr. Baines in his Blue Book is for £60,000—£11,000 more. That was a pre-war price. That was an estimate of a gentleman drawing up his own proposals, and naturally not putting them at the highest possible figure. Therefore we should save £10,000 at least by repairing the roof with timber rather than by putting on a new superstructure of steel. I believe that there is undoubtedly a case for delay and further inquiry before this most historic and noble building is transformed from what it is—a grand specimen of Gothic architecture—into a mere sham of modern engineering.

Replying on behalf of the Government, Mr. Beck referred to the fact that Mr. Wedgwood Benn arranged for

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PETROGRAD.—DETAIL FROM M. ROSENSTEIN'S HOUSE.—M. A. BIELOGRUD, Architect.

personally conducted tours of members of the House of Commons to go over the roof of Westminster Hall. Further than that, he continued, before Mr. Baines' most able scheme was adopted, the Institute of British Architects and the Society for the Preservation of Ancient Monuments were consulted, and if time permitted it would be easy to bring the names of ten firms to bear against the one quoted by my hon. friend. The fact is that it is too late. A definite contract has been entered into for the carrying out of the work on the lines proposed by Mr. Baines. The House has had one of the most able statements of that sort which was ever written placed before it by Mr. Baines. The matter was urgent, because we were told by those who are capable of judging that it was almost a miracle that this great and wonderful roof, one of the glories of British architecture, continued to exist at all, so decayed and eaten away was it. Therefore it was felt that not a moment was to be lost in the work of safeguarding it for many generations. Though I am most anxious to meet my hon. friend in any possible way, there is no possible way on this occasion, because the contract has been placed, after consultation with all the people who are capable of judging, and the great consensus of opinion was in favour of the plan adopted.

THE ELECTRICAL EQUIPMENT OF A COUNTRY HOUSE.*

By FREDERIC H. TAYLOR, Assoc.M.Inst.E.E., Assoc.M.Inst.M.E.

THE importance of the electrical equipment of a country house can, I think, hardly be overrated. In a town house electricity plays a most important part, but in an isolated position in the country its extent and its usefulness become considerably greater.

Although, perhaps, the greatest duty entrusted to electricity in the house is lighting, it is, even in comparatively small residences, called into service over many others, such as heating, motor drives for domestic machinery, electric bells and telephones.

Leaving aside for a moment such parts as bells and telephones, it may be said that all other equipment in the country house is such as requires a power plant for its operation.

Power.—For this purpose plants of various descriptions are in use: Water-power, and steam-power for installations of considerable magnitude, and suction gas, or paraffin engines for plants of more moderate dimensions. It is plants operated by the last-mentioned means to which I am particularly referring to-night, as these represent by far the largest part of the installations of the last few years. They have long since been obtainable in sizes from 1-2 K.W. to about 12 K.W., by a host of makers, and generally are very reliable in character. This commonplace paraffin-electric set, together with the use of metal filament lamps, has entirely revolutionised country house lighting both as regards prime cost and running cost, quite apart from the many other and equally important uses quite different in character to that of house lighting.

One of the greatest recommendations which such a plant has for its purpose lies in the fact that it can be put into the hands of unskilled labour and yet be relied upon to give satisfactory results. Commonly it is the chauffeur, gardener or odd man on whom devolves the duty of running the plant; the first is not always reliable, as his motor-car driving often takes precedence over everything else to the serious detriment of both battery and engine.

Voltage.—Many people urge that the most economical voltage to employ, except for large houses, is 25 or 50, and they are led to this view by the question of the number of cells to be employed in the battery. The pressure drop and the size of conductors are, however, equally important points, and bearing in mind that 10-watt 100 volt lamps with a satisfactory life can now be obtained, it would certainly seem that cases where 50 volts is to be preferred are now few in number, and limited to a comparatively small house. Another point is that where current is

* Paper read before the Junior Institution of Engineers on Friday, February 19.

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MANSION IN PETROGRAD.—M. S LIALEVITCH, Architect.

required for heating or motor driving, 100 volts becomes virtually a necessity, simply on economic grounds.

Complete Plant and its Economy.—The complete plant consists of a paraffin engine, mostly of the vertical high speed type direct, coupled on to a dynamo mounted on an extension to the bed plate, the engine being designed to be started up on petrol, and afterwards switched over on to paraffin after a few minutes' run, when the carburettor will have become heated sufficiently. The economy of plants of this description, though perfectly well known to engineers, does not seem to receive sufficient publicity. For a small set giving only 3½ to 4 kilowatts of output, and such as one would use for a house containing about 140 lights, a consumption as low as 1·6 pints of paraffin per kilowatt hour can readily be had. In a case now before me of this size the cost for fuel will work out at something like 5*s*. per week for 140 light job during the winter months. The dynamo is almost exclusively used for charging a battery of accumulators, from which current is taken *via* the main switch-board to the lighting and other circuits. I think the usefulness of this paper will be best served if, instead of dilating upon details of equipment, I confine myself mainly to some of the more usual mistakes one comes across therein.

Arrangement of Plant House.—(*a*) For some obscure reason, when a new house is to be built, the space to be allotted for the electric plant is usually of the very smallest possible dimensions. Not unusually this important item is left unconsidered until everything else has been settled. The placing of a plant in a very confined space cannot produce the greatest efficiency of working. The man who looks after it amongst his other duties usually considers those other duties more properly his own, and, therefore, his already somewhat meagre affection for the electric plant is not likely to be increased by unnecessary difficulties and inconvenience in working. To refer to one or two instances of this: In one country residence with which I was concerned, having decided upon the size of the engine room, the professional adviser for the general building then proceeded to find out what was the largest size of engine which could be accommodated, with the final result that in the ordinary course of working the charging of the battery had to be prolonged for several hours, owing to the small size of the plant. Further also, the cooling tank had to be placed in a passage running at right angles to the engine room, so I have no doubt this glorious design can better be imagined than described. In another case the engine room was placed underneath the drawing-room, and in order to improve its acoustic properties it was carefully lined out with match-boarding.

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When requested to visit the installation I could hardly share the surprise which the owner found in the serious noise which resulted when the engine was running.

In a third case the size of the engine room of a new house was originally settled on the assumption that a small gas plant was to be used. The owner, however, discovered this pious intention, and immediately insisted on electric light. Unfortunately, those responsible for the building construction found themselves unable to provide any further space for an electric plant, with the result that the battery room can only be entered from the engine room, and for the most part ventilates into it. The water tank had to be placed in a loft over the engine room, this tank being only accessible by means of an ordinary ladder.

(*b*) Another common mistake in the lay-out consists in the connection between the engine room and battery room by means of the main switch-board. It seems to be rather fashionable amongst many electric contractors and architects to have a hole left in the wall which divides the engine room from the battery room, the main switch-board being recessed into this. Two results may follow. One is that the acid fumes from the battery have free access to all the bare copper and brass connections of the switch-board, and the other is that with a view to meeting this point the back of the switch-board is sometimes boxed in with woodwork so as to form a shallow cupboard, only to receive, later on, various odds and ends and rubbish generally, and thus provide a good opportunity for fire.

However small the plant may be, I have invariably insisted on the switch-board being kept absolutely in the engine room and on its being fixed out from the wall by angle irons, with a clear 18 in. space at the back, thus providing a fireproof job and giving every facility for inspection of connections.

(*c*) Another very usual arrangement much to be deprecated occurs in the fixing up of the battery. Batteries being now much smaller in size than they used to be owing to the much reduced power required by the adoption of metal filament lamps, often the battery is put in a single row of cells down each side of the room, and one finds that for cheapness the stands are only made about 18 in. high, the result being that the cells rarely get properly examined. An even worse practice I have seen followed is that of doing without stands altogether and placing the cells direct upon the floor. It can well be imagined that then the cells are *never* examined, until the time comes when they refuse to provide any output.

Preferably, the cells should be on a stand of a height to allow for convenient and ready inspection, say 2 ft. 6 in. to 3 ft. high.

Main Switch-board to House.—Usually, though not always, the engine room is a building or part of a building quite detached from the house, with the result that mains have to be run from the one to the other. For the sake of appearance, these are usually laid underground. For some reason contractors, when left to their own resources, usually favour V.I.R. conductors drawn into a screwed pipe, these conductors being sometimes lead covered. Care and experience is required in this class of work much more so than seems to be usually allowed, the usual cause of trouble being:—

(1) Pipe line laid without a proper fall or any means of drainage.

(2) The lead sheathing not being properly earthed, even if earthed at all, with consequent risk of pitting, corrosion, and subsequent breakdown.

Interior of the House.—I turn now to a general consideration of the equipment in the house itself.

General Run of Mains.—In country houses of no great size, but requiring possibly only fifty to eighty lights, the main conductors which feed distribution boards can readily be run in pipe work chased into the main walls. In houses of larger size it sometimes happens that the architect provides a small trench which runs right round the house, and is intended to contain the electric mains as well as the pipes required for the other services, such as hot and cold water supplies, telephone, bells, vacuum pipes, &c. The idea of this trench, on first thoughts, sounds exceedingly good, and is undoubtedly a convenience; but it does not necessarily follow that it provides the best means of carrying the electric pipe work. Usually it is too limited in size, and often the hot and cold water services are so mixed up with the electric pipe lines that the latter are apt to suffer. If a separate trench were provided for the electric work only this would be quite another matter, and would no doubt be very satisfactory.

Control from Main Switch-board.—The point that often receives insufficient attention is that the mains between the engine room and house should be fused at each end. This is a necessary convenience, both for testing and also for isolation in case of fire.

Distribution Board System.—The number and arrangement of distribution boards must necessarily vary considerably according to the size and general arrangement of the house. There are, however, a few points which should always be borne in mind if the best design and greatest convenience is to be obtained. Generally, there should be at least one distribution board for each floor, and it is, I think, preferable that the lighting fed from any board should be limited to the one floor or the part of the house which it is intended to serve. For the sake of avoiding a little extra trouble, it does happen sometimes that one finds the wireman has circuits belonging to the ground-floor fed from the same way or ways as other circuits which serve a part of the bedroom floor. In large establishments it is often desirable to have two or more boards feeding the ground-floor. It may generally be said that in the absence of an independent specification the tendency is for the distribution board system to be much too limited, and one has noticed, for instance, a small country house carrying about 100 lights fed entirely from one 10-way distribution board. An important point often omitted, but which I always insist upon in my own work, is that of numbering each way of each board and providing a chart or list fixed in or near the distribution board to show exactly the circuit or circuits fed from each way.

Wiring System.—It may safely be stated that the system mostly favoured, particularly for new property, is some class of pipe work, and in this grave errors and omissions are often made. A notable instance is the use of slip-socket tube laid under plaster work, simply of course for the sake of cheapness in the first cost. It is sometimes urged that the use of some form of contact nipple so as to ensure metallic continuity overcomes every objection. This is not so. The tubing still remains slip-socket, having, therefore, an open seam and also other objections. Assuming that welded or other class of absolutely closed tube is used, the point most commonly omitted is that of the proper and efficient earthing of all metal work. In country house installations supplied from their own independent plant it has been urged to me that the universal earthing of the metal work of the job, including switch knobs and cover plates, involves a needless strain or rather stress upon the insulation resistance; but personally I would rather strain or stress the insulation than strain or stress the ladies or gentlemen who occupy the house, particularly as their personal insulation resistance is not likely to be as good as that which I would guarantee for the job.

Conductors.—With regard to the system of conductors, the only point to which I wish to refer in the limited time at my disposal is that of voltage drop. It is as curious as it is unfortunate that many of those engaged in this class of work altogether ignore this question of drop, and would seem to systematically settle all their sizes on the I.E.E. list of sections, quite forgetting that there is another rule (No. 33*a* of the I.E.E.) which specifies the permissible drop, although I do not necessarily urge that this rule should be strictly followed. It is indeed a matter for grave regret that one should find sections so insufficient that when a small proportion of the lights are turned on or off a visible jump occurs to the lamps remaining on, this giving effects resembling alternately a miniature searchlight and a red-hot hair pin.

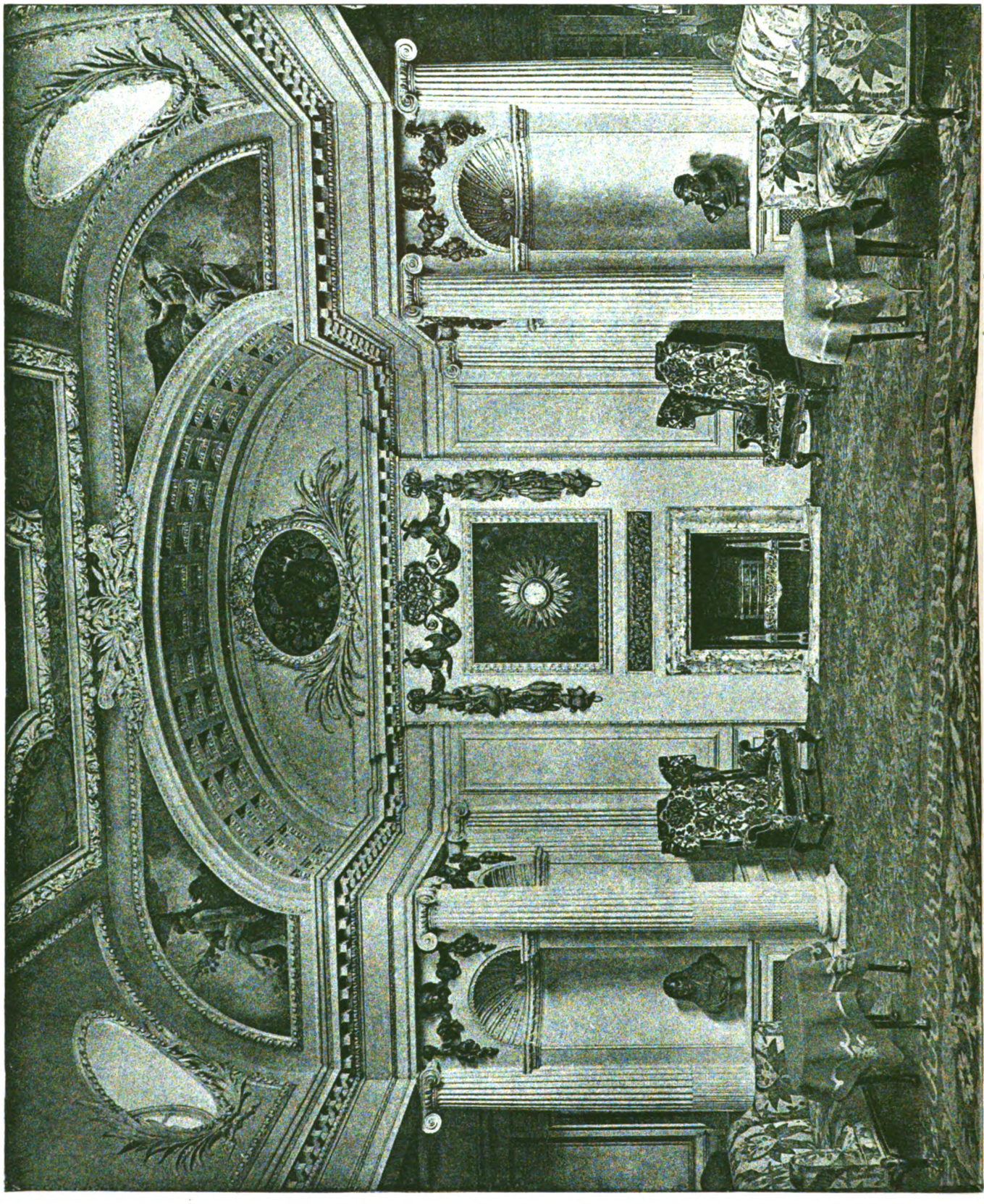
Tests.—Tests properly carried out are mostly conspicuous by their absence, and it is surprising how few wiremen in charge are capable of taking the insulation test in such a way as to be of any real value. Not only should the work be tested on completion, but also at regular intervals afterwards, either quarterly, half-yearly, or yearly, and a proper record kept of the results. I think the method which was adopted many years ago by the testing department of one of our large supply companies by far the most reliable. The method consisted in going over the entire building and lighting up every lamp in the place; when this was done the tester turned to the origin of supply, drew the main fuses, and connected up the testing set, thus ensuring that the whole of the job was included.

Not only should tests be taken of the insulation resistance, but also of the earthing to see that this is reasonably good. The circuiting from the distribution boards should likewise be tested, as it not infrequently happens that wire-

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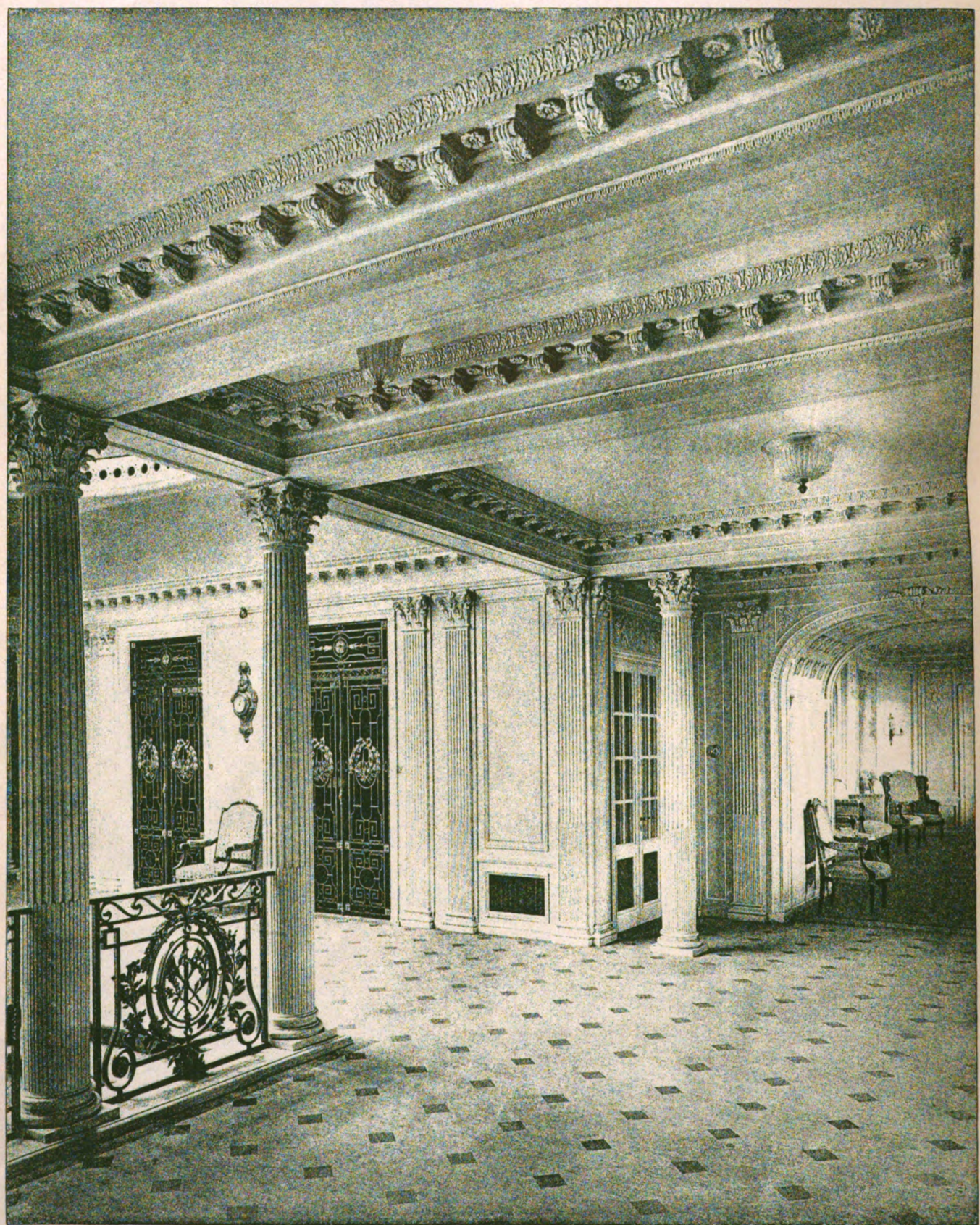
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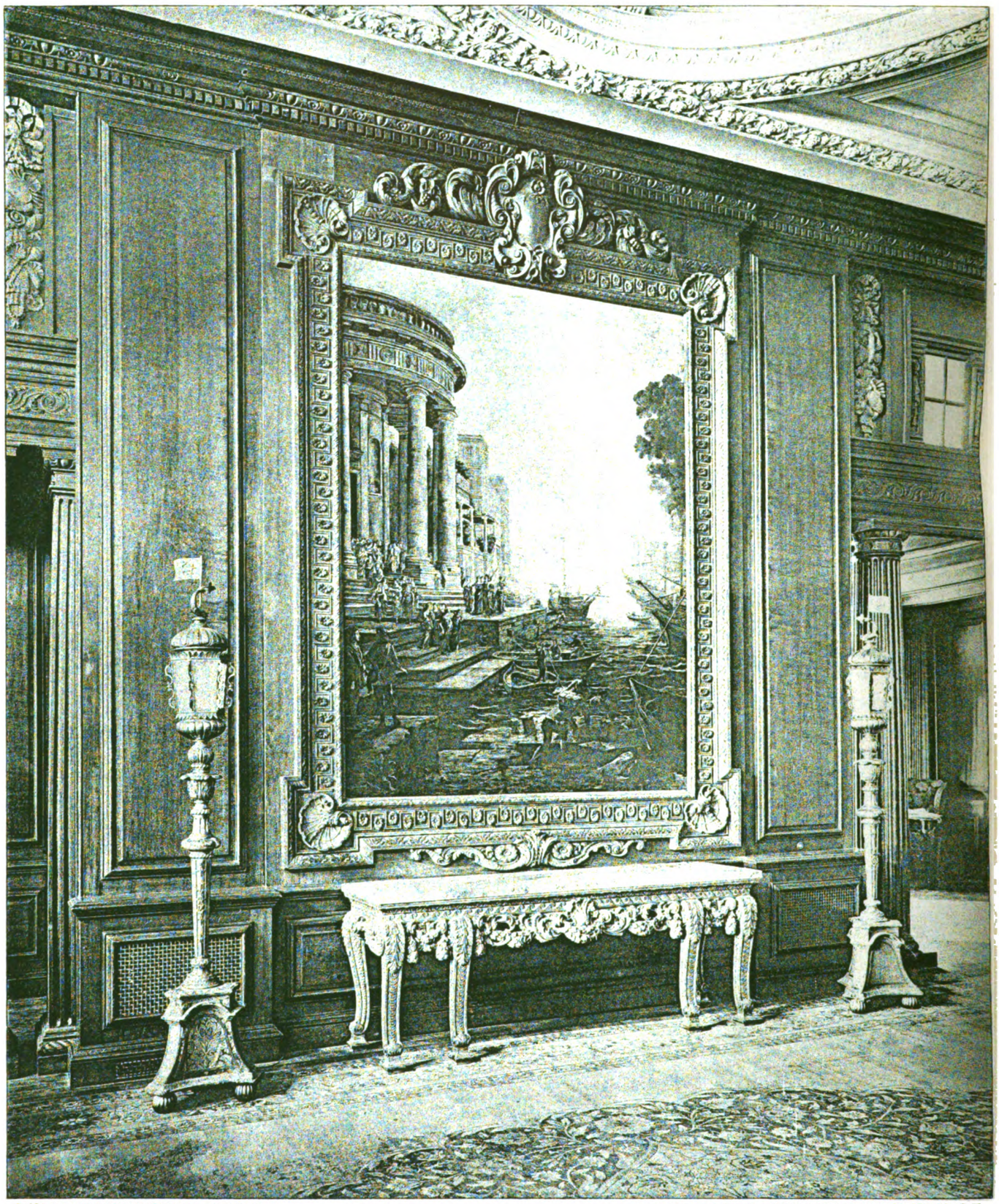
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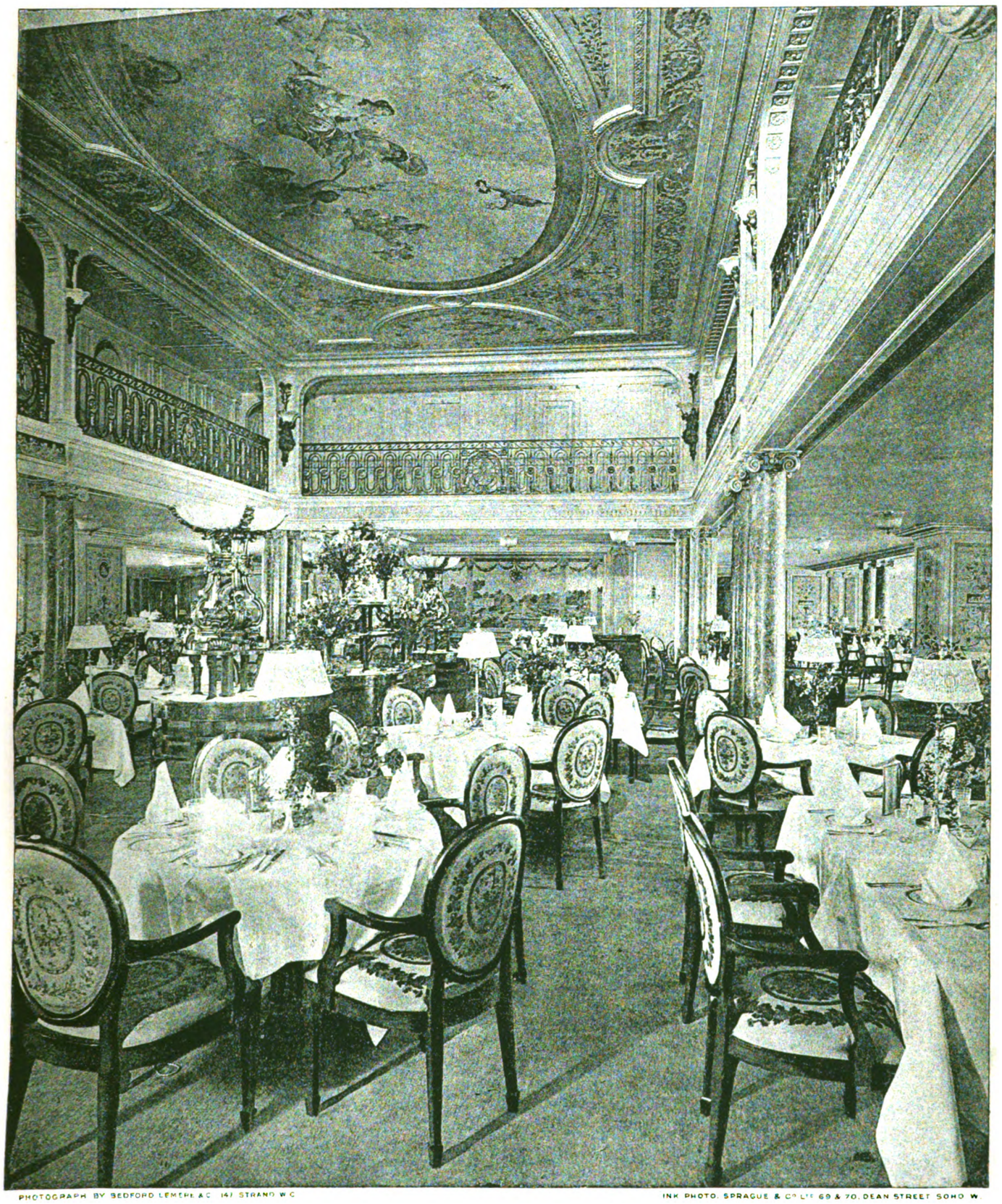
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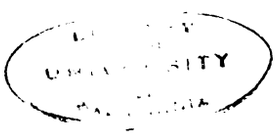


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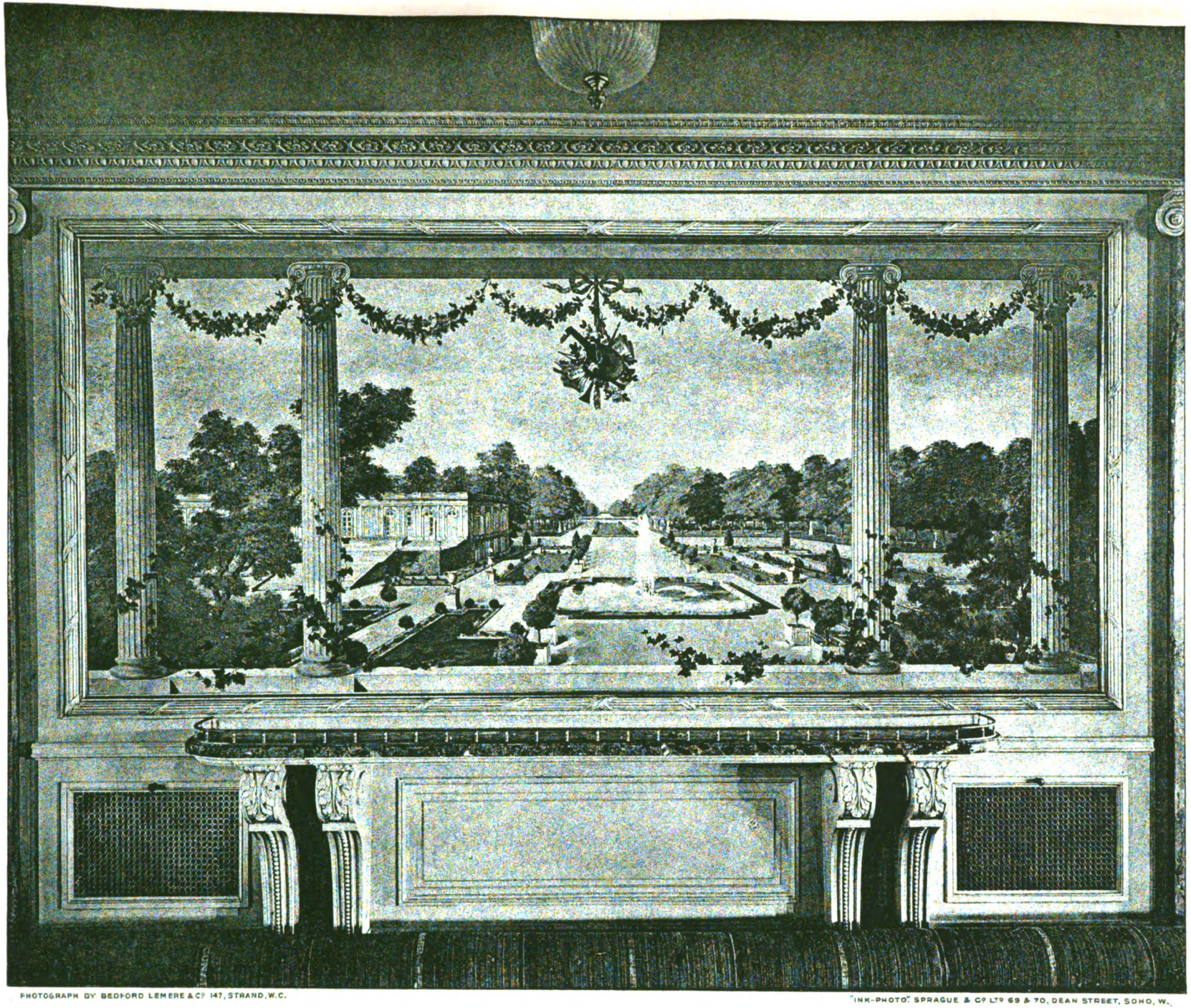
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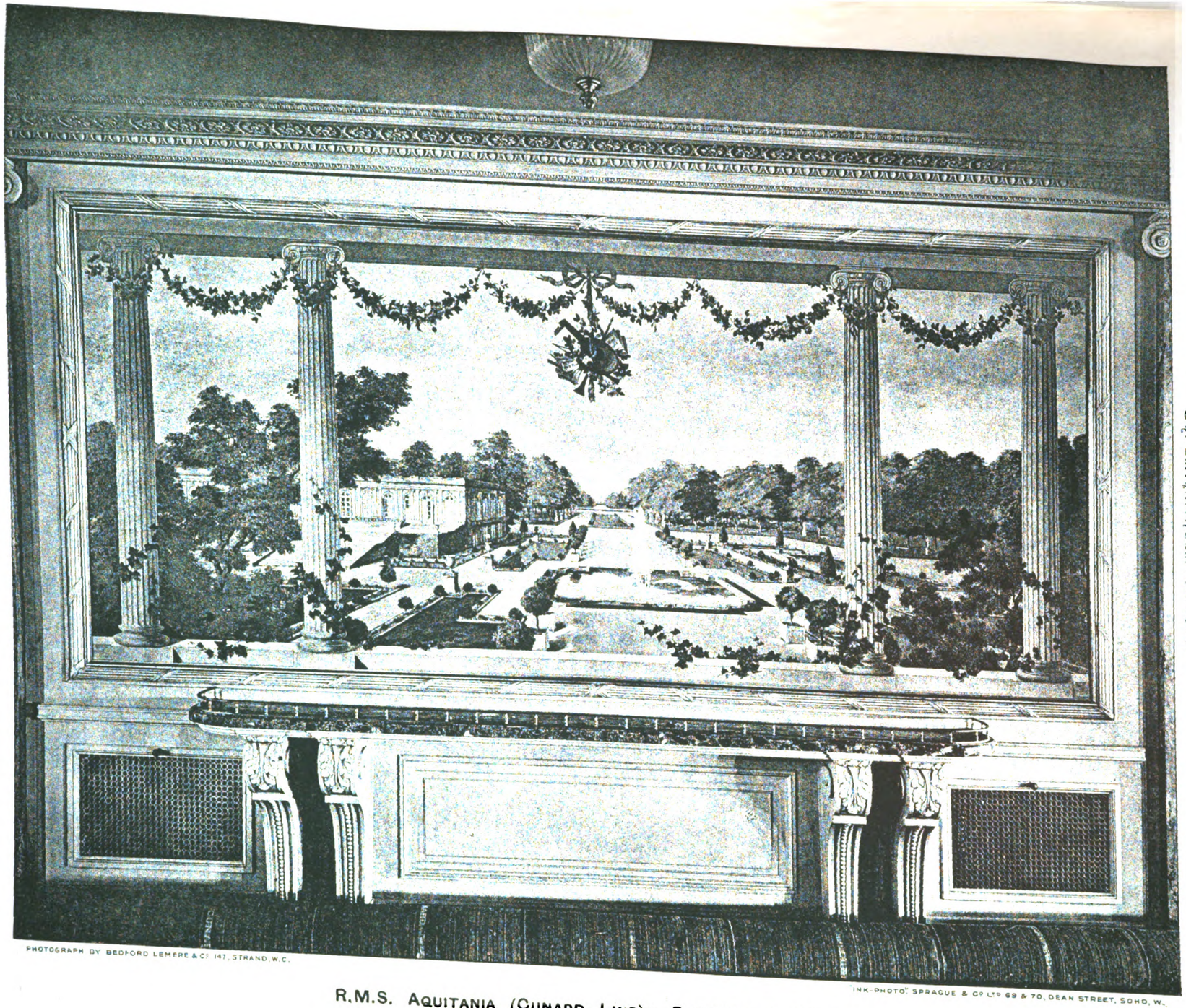
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men in connecting up cross connect one or more of the circuits.

Lamp Switching.—I would like to refer briefly to some of the great conveniences which can be obtained by proper methods of switch control. What I have in mind is what is commonly known as 2-way and intermediate switching, by means of which a lamp or lamps can be turned "on" or "off" from any one of 2, 3, or more positions, regardless of how the switches may have been left at the other positions.

This great convenience is particularly applicable to hall and staircase lighting, though it is naturally used in many other places.

I have here to show you some actual circuits so arranged, and also some spare switches of the types named and others. These switches have been almost entirely developed by one firm (Messrs. A. P. Lundberg & Sons). I think it might fairly be said that to them very much credit is due for the good results obtained, and for the quality and design of their switches.

Another type of switch which is convenient for some positions is a 2-way-and-off switch which enables one to light or extinguish either one or two lamps, but never both at once.

I might here say that I have only just touched upon the fringe of the art of multiple way-lamp switching. It has now become quite a big subject, but unfortunately one to which very little heed is paid by the electric wiring fraternity.

Automatic Time Switches.—For country house lighting the automatic time switch has a use peculiarly its own. It is of great advantage in securing economy in the use of electricity in the servants' quarters, where unfortunately, as is commonly suggested, waste will most freely occur. By means of this switch the use of current can be automatically limited to any pre-arranged time, and the hours of usage may be varied at will either monthly, daily, or as often as may be most convenient. The clock part of the instrument is quite easy for any ordinary person to set, and the clock itself can readily be fixed in a lock-up case. The circuit to be controlled has one of its main wires connected to this automatic switch. I usually prefer to fix with a time switch an ordinary lamp switch which can be used in case of emergency to short circuit the automatic, as this may sometimes be desirable in cases of illness or other emergency.

Illumination and the Value of Measurement.—I would like to refer to the great importance of the scientific treatment of illumination. Although it is easy to adopt scientific methods in a commercial or business establishment, in the case of a residence one is up against the difficulty of reconciling the artistic views of the inhabitants with one's own views of what forms correct illumination. In the best of cases a compromise has to be struck, and in most cases the scientific treatment has to give way entirely to the so-called artistic taste of those who will use the rooms. Certain cardinal points can often be adopted if one is tactful enough to avoid too much specific reference to them when advising the user. For instance:—

(*a*) Exceedingly bright lights in the field of vision must be avoided, or, in other words, the lighting units must be kept out of direct line of vision.

(*b*) Highly polished reflectors giving images of the lamp filament are to be avoided.

(*c*) Lamps should be so placed that the light does not become reflected into the eye, as often happens with desk or table lighting.

(*d*) An absolutely uniform distribution of light over the entire room is not required, but whilst a certain measure of illumination is necessary for what is called the "general" lighting, the objects specially required to be seen must be made the subject of individual or "local" lighting.

(*e*) A room which is, practically speaking, in darkness, with the exception of one particular part only, is to be deprecated. Such points as the foregoing will not only result in efficiency, but will also tend to preserve without injury the most beautiful of human gifts—that is, eyesight.

Due to the splendid work of the Illuminating Engineering Society of London, much has been accomplished in educating the public as to what is and what is not correct illumination. Unfortunately, the human eye, *per se*, cannot be regarded as a suitable illumination measurer. It is much too easily deceived, and in view of this fact the scientific measurement of illumination has been developed. However subject to errors due to the personal element in testing, it is nevertheless true that illumination tests are of immense value, practically as well as scientifically. Without them, the illuminating engineer would be in much the same position as a steam engineer would be if he had no means of taking indicator diagrams on his engine.

For the different positions in the house very different illumination values are required. Generally, it may be said that the illumination must be somewhere between 1 and 2-foot candles, but for local illumination, such as the dining table or the dressing table, more like 4-foot candles are requisite, some persons preferring even 6, and for such a special purpose as the billiard table 12 to 15-foot candles are considered more appropriate.

In view of the very able way in which this subject was referred to by your past president, Mr. Dunn, in October last, I feel that further reference to it is hardly necessary.

I would, however, like to show you the Holophane Lumeter, which is exceedingly useful in taking measurements of illumination and for other photometric work, such as testing the reflecting power of wall paper or other surfaces, or estimating candle power of light sources. The notions which many people have on the subject of artificial lighting are, indeed, curious. Some, for example, consider it absolutely necessary to be able to *see* the actual lamp, ignoring the law that light on the subject and not in the eye is the law of truth. Other people, whilst admitting the influence of colour on the daylighting of a room, will quite ignore it when dealing with electric or other light. The value of a "matt" surface for lighting and for avoiding glare is usually either disputed by the layman or ignored altogether by him. Recently a friend drew my attention to an extensive type of steel reflector, and thoughtfully suggested to me that the interior finish of its surface, being a frosted aluminium, must surely be wrong.

Conclusion.—Many points of interest in the electrical equipment of a country house which I had in mind to deal with I have, owing to the limitations of time, had perforce to leave out. These would have included such matters as the electric heating, bells, house telephones, water pumping, and the several other useful services performed by that handmaiden of convenience—electricity.

ART IN LONDON.

OLD BUILDINGS IN FLANDERS.

MR. MARTEN VAN DER LOO (of Antwerp) deserves well of his country for his notable industry in portraying the quaintnesses of its landscape scenery. The series of colour-etchings on exhibit at the Gallery of Goupil & Co. (of Bedford Street, Strand) includes views of several structures now destroyed as the result of a ruthless invasion of barbarian hordes. The artist has an appreciation of breadth and a virility of touch which but rarely degenerate into coarseness. In some instances, it is true, the hatching and cross-hatching spoil the effect, as in "Vieux quai aux moules, Lierre" and "Anvers et la Rade," but this treatment is fortunately exceptional.

A very pleasant little sketch is "Petite cour à Anvers," and its neighbour, "Béguinage de Bruges—les grandes arbres," is even better; it is poetic and is fully expressive of its snow-clad sombreness. "Vieilles maisons à Gand (Tichelery)" is notable for its "values," and with the buildings effectively silhouetted against the sky; "Effet de neige à Gand" (a work which gained the Diploma of Honour at Florence last year) is a most sympathetic production, and the suspicion of flatness in treatment answers satisfactorily here. "Reflétements—le long de la Nethe à Lierre" combines breadth, good colour, and well-managed water reflections. "Vieille cour à Anvers" is anæmic, while the woman's figure in the foreground is too slight and unreal. We must include a notice of two Malines sketches —"Le pont gothique" and "Le quai vert," the latter, indeed, showing the further side of the Gothic bridge; the former sketch is distinctly crude in treatment, and acts as an unnecessary foil to its neighbour, which is one of the most masterly drawings in the exhibition. A few sketches from King's Lynn are also included—one an oil colour, which displeased us intensely; but as we do not wish to conclude on a discordant note, we will add our appreciation of the views from the "Béguinage de Bruges" (Nos. 5 and 6), the former for its rhythm and the latter for its unusually broad treatment.

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ILLUMINATING ENGINEERING SOCIETY.*

FIXTURES FOR PUBLIC LIGHTING.

(Concluded from last week.)

MUCH that has been said applies both to domestic and public lighting. But in the latter case the claims of good lighting from the decorative standpoint are particularly pressing. Buildings that are frequented by the general public deserve illumination in conformity with the architectural scheme. In a private house defects of taste are perpetrated by the individual; but the conditions in public buildings reflect the artistic sense of the nation.

The lighting of such buildings is too frequently neglected. There is a tendency for the illumination to be considered at the last moment, when the building is almost complete, and the money set apart for its adornment almost exhausted. Cases could be mentioned of public buildings where the interior is impressively designed and lavishly decorated, but the fixtures are of the crudest description and have no relation to the general scheme of the building, although the illumination may be considered good. To the architect it should be a matter for concern how the interior designed by him is lighted.

It is therefore essential not only that good and suitable fittings should be designed under the architect's supervision, but that these fixtures should be placed in the right positions and give the correct illumination. Upon this depends the whole success of his efforts as far as night time is concerned. The position of fittings should be decided at an early stage in the design of the building, thus obviating the frequent practice of placing brackets on the centre of good columns, or over mouldings, spoiling the architectural scheme instead of adding to its effect.

There are those who consider that in churches of historic value the atmosphere should be preserved by retaining old fixtures and illuminants. This is an arguable position, but as a matter of fact the introduction of modern illuminants, at first vigorously opposed, almost invariably comes to pass sooner or later. But it is curious to see that in many such cases the new illuminant, when it is introduced, is employed with little technical skill, and without any serious attempt to grapple with the complex problem of using new illuminants and fixtures in old surroundings. There are, perhaps, few problems in lighting that present such varied aspects. Besides considering the architecture one has to bear in mind the practical points involved in the needs of the worshippers. In large mosques and cathedrals, where the service is mainly carried out by the priest or choir, the congregation do not need so much light as in a modern English church where they take an active part in the proceedings.

Even in those cases in which the lighting has been considered with some care, one often finds a curious neglect of period. For example, while the lighting of Westminster Abbey may be good, the modern fixtures are not in keeping with the architecture. They are not Gothic, but have a strong Dutch influence. Those installed in Liverpool Cathedral are perhaps not so efficient as lighting units, but they are certainly in harmony with the architecture of the building.

Before leaving this part of the subject a word or two may be said as to the part played by fixture design in exterior lighting. It is a remarkable fact that, while people will spend considerable care on the artistic side of interior lighting the possibilities of outdoor illumination have scarcely been considered. Lamp-posts are erected bearing no relation to the surrounding architecture. There have been a few attempts to design special lamp-posts. A fine model was worked out some years ago by the Royal Academy, and so far as the author is aware the design has not been duplicated. The original model was presented to the Office of Works and now occupies a somewhat forlorn position on the Horse Guards Parade. Another instance of good design is the bronze standard in The Mall. Lamp-posts are usually purchased by the borough engineer. It would be desirable for the designs to be first submitted to an architect.

There are also possibilities in the treatment of fixtures attached to the frontages of buildings, which should be designed to conform with the architecture. Again, the electric sign need not be the hideous object which architects rightly condemn. A solution would be to design a space for the sign, in the same way as one is left for the facia of a shop. This may present architectural difficulties in some cases, but as a rule they could be overcome by co-operation, at the proper stage, between the architect and the electrical engineer.

THE INFLUENCE OF LIGHT AND COLOUR ON DECORATION.

It has already been pointed out that the fixture is an important part in the scheme of decoration. But besides this function the lighting unit has the effect of illuminating surrounding decorations and enabling them to be appreciated. The nature of these decorations should, therefore, have an influence in determining the scheme of lighting to be adopted. For example, if a hall has a painted ceiling and frieze, it is not a satisfactory plan, from the decorative standpoint, to use fixtures which concentrate nearly all the light downwards, leaving the ceiling and frieze in semi-darkness.

The part played by colour in furniture has been mentioned, but the possibilities of colour have been neglected in modern fixture designs. The absence of colour is sometimes considered a drawback to indirect lighting for domestic use; semi-indirect and direct offer more scope by the simple use of coloured material to screen the light. The old-fashioned tent dining-room light would have been abandoned long ago were it not for the colour effects to be obtained. The selection of colours in the lighting appliance to harmonise with the walls and furniture in a room offers scope for considerable ingenuity and taste.

MODERN DEVELOPMENTS.

Of late years a great deal of attention has been devoted to the design of fixtures with a view to the distribution of light in the most efficient manner, and in many cases entirely neglecting the artistic standpoint.

It must be admitted that several types of fixtures designed on traditional lines, and perhaps based on old models, are not particularly efficient as distributors of light: the metal work leaves little to be desired, but the arrangement of light, shades, and reflectors is often inefficient.

It must be borne in mind that the concentration of the greater part of the light downwards by the direct method, which is rightly insisted upon from a utilitarian standpoint, may not always be desirable from an architectural standpoint; the distribution should vary according to the nature of the decorative surfaces to be illuminated.

The indirect and semi-indirect systems of lighting represent a typically modern development, although they were not unknown in the early history of electric fixture design. The relative merits of these systems hardly fall within the scope of this paper. It is a question how far they can be combined with any of the traditional styles. Indirect fittings of certain periods (Tudor, for example) are sometimes made, and their effect may be pleasing. Yet an indirect fitting in a Tudor manor house, having, perhaps, half-timbered ceilings, however deftly adapted, would seem to be an anachronism.

On the other hand, in lighting halls with very fine painted ceilings the method is effective, provided other supplementary lighting is included if required to relieve any possibly depressing effect from dark surroundings.

The use of indirect and semi-indirect lighting should have a distinct influence on ceiling decoration, and it is conceivable that such methods might give rise to an entirely new method. In buildings used mainly by artificial light (theatres, for example) the design of the ceiling has often been expressly adapted to artificial light. Domes have been constructed acting as reflectors, in some cases ceilings and columns of diffusing glass or alabaster have been built in and lamps mounted behind them, and cornice-lighting has been applied in conjunction with decorative friezes.

CONCLUSION.

In conclusion, to summarise the main points of the paper, it may be suggested:

1. That in dealing with interiors of a distinctive period the appearance of the fixture is just as important as the illuminating efficiency. In such cases it is best for the architect to select the type of fixture; ensuring, by co-operation with the engineer, that it embodies modern practice as regards efficiency.

2. That in industrial lighting, such as printing offices, factories, &c., these are best arranged by the illuminating engineer, who should be consulted by the architect.

3. That where it is desired to preserve the correct atmosphere of an old-period room it is permissible to reproduce the fixtures of the particular period, remodelling them carefully to present ideas, which can be done without incongruity.

4. That with a modern room making no claim as to purity in style any system of lighting and type of fixture is per-

* A Paper by Mr. W. F. Thorpe read on February 16.

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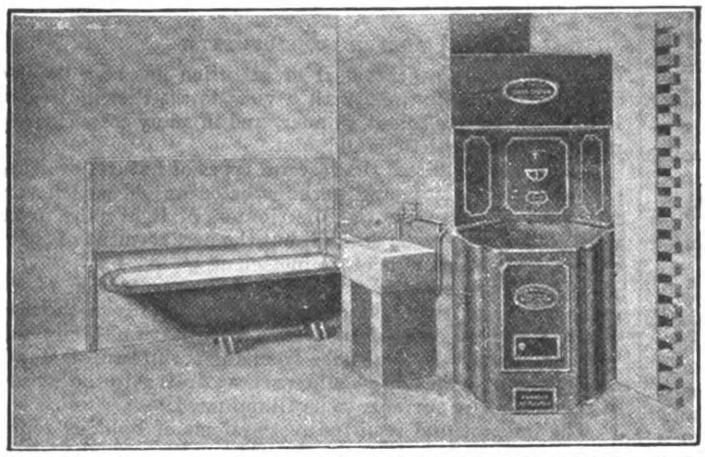
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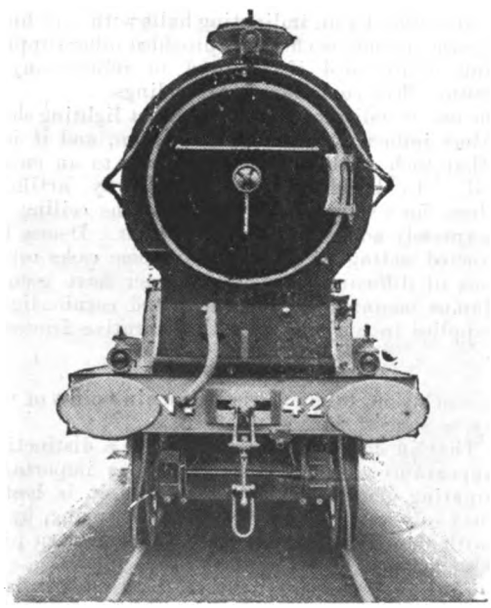
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missible as long as adapted to the practical requirements of the room.

5. That in outdoor lighting the decorative possibilities of illumination have not yet been properly appreciated.

6. That it is sometimes advisable to consider the method of illumination before designing the room, as various systems of lighting are best adapted to enhance certain schemes.

7. That the above considerations point to a much-needed co-operation between the architect, the engineer, and fixture designer, with a view to raising the artistic as well as the practical aspects of illumination to a higher plane.

Discussion.

Mr. John Darch followed with a contribution which dealt more particularly with design in lighting fixtures and the question whether true art did not demand that twentieth century light should have twentieth century fittings. The beautiful designs of former days were admirably adapted, he said, to the necessities of their time, but to use them with gas or electricity in modern buildings was a caricature. Art should be living and progressive, adapting itself to changing circumstances. High power lights cry for an altogether new class of fixtures, or none at all. In such a design the golden rule should be "fitness for its purpose and fitness for its place." The necessary features of construction should themselves form the lines of beauty. The designer must bear in mind the purposes of the illumination, the intensity required at the working points, the nature of the distribution, the consideration of shadows, the care for people's eyes, &c. The whole history of art testifies to the fact that the best work is that in which charm is put into an article without the need of superfluous ornament. Suitability is more pleasing than ornamentation and practical success than either. Churches, to the fixture designer, are perhaps the most difficult subject, because the fixtures take precedence and govern the illumination instead of the illumination governing the fixtures. The usual result is disastrous failure, for there is more anxiety to get a striking design than to provide for the needs of the people. When art ceases to be consistent it ceases to be true. There is a tendency with certain so-called artistic electricians to misapply objects. For example, a Roman boat or teapot-shaped hand oil lamp has been slung up as a pendant and an electric lamp bulb stuck in the spout-end. Finally, Mr. Darch pointed out that a serious impediment to progress exists in the great fixtures industry itself. Thousands of workmen are daily engaged in the monotonous production of stock patterns over which the controlling force is not art but dividends. As was lately remarked, "Look at any fixture you please and judge for yourself how much is mere excrescence hanging on in the name of art, but having its true motive in the pocket-book."

Mr. A. P. Trotter spoke of the importance of guiding and educating public opinion so as to spread that demand for beautiful things which William Morris had awakened at a time when art was at its very lowest ebb. Many people considered that for private reading nothing was better than a shaded lamp, whereas others held that shaded lamps were entirely wrong. Again, the shopkeepers taught one to furnish in one period, but a good many people were content to mix periods so long as each was good.

Mr. E. P. Warren, F.R.I.B.A., pointed out that Mr. Thorpe had implied in his paper that architecture was in every period self-conscious, and that that fact would influence the lighting fittings. This certainly could not have been the case in the earlier styles. For then such contrivances were evolved from sheer practical needs just as much as were the products of the metal worker, the glazier, the carpenter, or the carver. All these were working in accordance with their traditions, but they produced things which please because they were so intensely suited to their purpose. To-day we were dealing with an entirely different illuminant, and it seemed to him that if our work was to give anything more than passing interest the fixture must be endowed with a form thoroughly appropriate to its use. At present, unfortunately, the tendency was to hark back perpetually and to use dead men's ideas and so escape the trouble of thinking for oneself. Architects were the chief sinners, for they were always cribbing and copying. The young architect certainly needed the steadying influence of good old work; but once he has found his feet he should think for himself. The new illuminant offered a splendid chance for originality. What an uncomfortable type of fitting was the standard table lamp with its trailing wire! Were there no better means of charging lamps than that adopted for the existing battery lamps? The Illuminating Engineering Society might well turn their attention to bringing out a substitute for the miserable standard lamp. The designer, having first come to a conclusion as to the best way of applying the light for the particular fitting he is designing, should think of the kind of building or room in which it is to be placed. But he should not think about style or ornament. He (Mr. Warren) entirely protested against the idea that electrical fittings should be in any obedience to the style of the building. The charm of our old churches is their succession of styles. There was no reason why such fittings should not have charm by contrast as well as charm by harmony. The parish churches of France, for example, nearly all contain eighteenth century crystal chandeliers. So long as the workmanship put in is thoroughly beautiful it did not matter to what style it belonged. He hoped before long to see practical beautiful fittings of the second decade of the twentieth century, and ones which they would not be ashamed to introduce into any building whatsoever. It was useless to dogmatise about the lighting of a room because there was so much difference of opinion.

Mr. P. J. Waldram described the wonderful success of the lighting arrangements at St. Jude's, Golder's Green (although in theory they should be open to objection), which were marked by absolute utility and nothing else.

Mr. C. H. Burt defended the manufacturer for keeping to familiar designs by blaming the conservatism of architects, who insist upon having them of definite styles. Again, the manufacturer of decorative fittings is handicapped by the requirements of the electrical engineers to which they must conform. The new voltages were far too high to get the best decorative results.

Mr. Percy L. Marks thought it was a great mistake for any architect to profess that he is an expert on every point in connection with a building. It would be much better if the profession were to recognise that their main work was the planning of a building, and that the architect should call in the co-operation of experts in different branches, such as lighting, heating, and so on. Possibly this may seem a counsel of perfection, but it would lead to much better results. If this suggestion applied to certain special sciences it applied to lighting more than any. Mr. Thorpe was, in his opinion, quite wrong in imagining that architects design their lighting fixtures in accordance with the style of their building. Any attempt at such co-ordination would be a great mistake and would produce a sense more of a museum than of a comfortable building.

Mr. A. E. Penn supported the previous speaker in the view that if co-operation were brought into existence better results would be attained. The difficulty was at the present moment to get professional gentlemen to realise they were in an age of specialisation. Illuminating engineering had become a science now, and if co-operation could be achieved the lighting profession were in for a better time.

HALF-WATT LAMPS AND FITTINGS.

Comparatively few people appreciate the very radical change in the methods of lighting that the introduction of the new half-watt lamps will of necessity bring about. As a lighting authority recently stated, the half-watt lamp compels the use of some form of indirect lighting, as the intrinsic brilliancy of the concentrated filament is too great to be used in any of the usual open direct methods of lighting.

The very large gain in economy will cause the half-watt lamps to be widely used, and with their introduction will come a complete change from the generally crude ineffective methods of employing lamps in ordinary reflectors. Not only will the efficiency of lighting be improved, but the attractiveness of illumination will be enhanced through the proper use of these half-watt lamps in suitable indirect fittings. As an example of the beautiful and attractive results that can be secured, readers of this Journal are referred to the lighting installation of Messrs. Selfridge & Co. in their new annexe for groceries and provisions in Oxford Street. These new premises are lighted by means of these half-watt lamps in B.T.H. "Eye-Rest" indirect lighting fittings. The results are excellent. The whole store is beautifully and efficiently lighted, and must be seen to be appreciated.

Now that half-watt lamps are available in considerable quantities for prompt deliveries, it is desirable to remind purchasers of the importance of using these new lamps in suitable and correctly designed fittings. It is absolutely necessary that this be done if disagreeable and distressing glare is to be avoided and the agreeable and attractive lighting effects instanced above are to be secured.

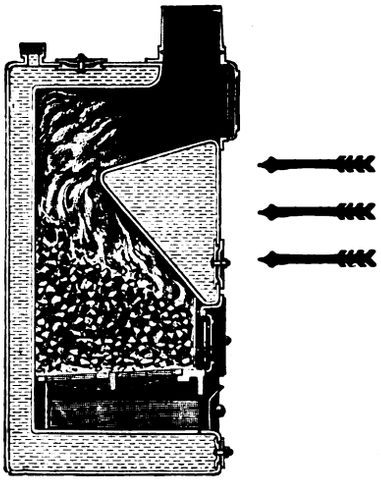
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BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CAMBRIDGESHIRE.

Murrow.—Council school (£1,025), for the Isle of Ely Education Committee.

CUMBERLAND.

Carlisle.—Open-air school (partly permanent buildings), Blackhall. Mr. Marks, Council surveyor. (£3,480.)

Egremont.—Smallpox hospital, for the Galemire Joint Hospital Committee.

DERBYSHIRE.

Derby.—Proposed Secondary School for Boys, Temple House Estate. Mr. A. Macpherson, architect, 16 Tenant Street. (£15,000.)

Swadlincote.—Shop, High Street. Mr. J. G. Allen, A.R.I.B.A., architect, 13 Holmdale Road, London, N.W. Mr. E. Clarke, contractor, Swadlincote Road, Woodville. (£1,026.)

DEVON.

Newton Abbot.—Proposed twenty workmen's dwellings.

Shebbear.—Proposed working-class dwellings.

DURHAM.

Autonstile.—House, for Mr. G. Inness.

Blackhall Colliery.—Two hundred and three houses, for the Horden Collieries, Ltd.

Crossgate Moor.—Portion of hospital, for Durham Guardians.

Darlington.—St. Luke's Sunday School. Messrs. Clark & Moscrop, FF.R.I.B.A., architects, Feethams.

Murton.—Twenty-six houses, for Mr. J. M. B. Doxford.

New Seaham.—Two pairs of flats, for Mr. R. Davison.

Springwell.—Two houses, for Mr. J. Crawford.

ESSEX.

Barking.—Proposed Secondary School for 210 places. County architect. (£11.000.)

Great Dunmow.—Council school: enlargement. (£2,450.)

Leyton.—Proposed Secondary School for Boys.

Romford.—Police Station.

Proposed Secondary School for two hundred boys.

Upminster.—Council school for girls and infants.

HAMPSHIRE.

Bournemouth.—Building, Malmesbury Park Road, for Miss Cameron (for the use of the Health Association).

HERTFORDSHIRE.

Barnet.—Workhouse: chapel.

KENT.

East Farleigh.—Council school for 250 places.

Eynsford.—Council School: alterations. Mr. W. H. Robinson, Kent Education Committee's architect, Sessions House, Maidstone.

Plaxtol.—Council school for 230 places.

Queenborough.—Council school.

Willesborough.—Children's homes (£2,000), for East Ashford Guardians.

LANCASHIRE.

Accrington.—P.M. Church, Whalley Road. (£4,000.)

Hindley Green.—"The Miners' Arms": alterations, for Messrs. Sumner & Co.

Morecambe.—Five houses, Chatsworth Road. Mr. W. Gardner, builder, "Stoneleigh."

Oldham.—Picture theatre, Lees Road. Mr. W. H. Matley, architect, 14 Ridgefield Road, Manchester.

LEICESTERSHIRE.

Coalville.—Business premises, Belvoir Road, for the Co-operative Society. Mr. T. I. McCarthy, architect, Central Chambers.

Hinckley.—Billiards hall, Station Road, for Mr. Amos Taylor (of Burnley).

Leicester.—Police Station, Hinckley Road.

MONMOUTHSHIRE.

Abertillery.—Proposed 122 Council houses.

NORFOLK.

Aylsham.—Council cottages.

NORTHAMPTONSHIRE.

Oundle.—Two houses, Gordon Road, for Mr. S. Tebbutt.

Rushden.—Proposed Infants' Council school.

NORTHUMBERLAND.

Berwick-on-Tweed.—Secondary school.

Prudhoe.—Proposed thirty working-class houses, Edgewell.

Slaley.—Sanatorium, for the County Council.

SHROPSHIRE.

Ironbridge.—Drill Hall and Stores, for the County T.F.A. Mr. J. Butters, architect, Castle Square, Ludlow. Messrs. Vaughan & Son (of Hereford) contractors. (£1,766.)

SOMERSET.

Banwell.—County Council school. Messrs. Jane & Fry, architects, Waterloo Street, Weston-super-Mare.

STAFFORDSHIRE.

Burntwood.—Two houses, Chase Road, for Mr. S. S. Willett.

Chasetown.—Two houses, Rugeley Road, for Mr. T. Moss.

Smethwick.—Cinematograph house, Bearwood Road, for Mr. Hewitson.

Tamworth.—Proposed sixty-seven working-class houses, The Bradfords (£14,600).

SURREY.

Godstone.—Council Offices. Mr. G. E. S. Streatfeild, F.R.I.B.A., architect, 9 Stone Buildings, London, W.C.

SUSSEX.

Bognor.—Proposed working-class houses, Upper Linden Avenue and Sheepwash Lane. Mr. A. O. Bridges, Council surveyor.

WARWICKSHIRE.

Rugby.—Bakehouse, &c., Little Elborow Street, for the Co-operative Society.

Four houses and a workshop, Kew and Lodge Roads, for Mr. R. Gardner.

Two houses and a shop, Railway Terrace, for Messrs. Tallon & Sons.

WORCESTERSHIRE.

Bromsgrove.—Bungalow, Crofton Common, for Mr. R. Malkins.

Rednall.—Twenty-seven houses, for Mr. E. H. Twiggs.

Stourbridge.—Twenty workmen's houses, Hemplands and Vicarage Roads.

YORKSHIRE.

Baildon.—Six houses, Westmoor Avenue, for Mr. A. Sykes.

House, Bank Crest, for Mr. J. Dickenson.

Two houses, Wainman Street, for Mr. W. Holmes.

Birdwell.—House, Chapel Street, for Mr. A. Taylor.

Brighouse.—St. Paul's Wesleyan Sunday schools.

Castleford.—"The Woodman" Inn, Glass Houghton: alterations.

Rotherham.—Inn, corner of Corporation Street and Upper Hillgate, for the Trustees of R. J. Bentley.

Tadcaster.—Workhouse: additions and alterations. Messrs. Bromet & Thorman, architects, Station Road. Messrs. Brayshaw Bros., contractors, Station Road. (£1,286.)

Worsborough.—Three houses, Hay Green Lane, for Mr. C. W. Allflatts.

WALES.

Cardiff.—Building on site of the Greek Church: alterations into an Archimandrite's residence. Mr. C. James, F.R.I.B.A., architect, Charles Street Chambers.

Llanelly.—Proposed joint isolation hospital.

House, Parc Howard. Mr. W. S. Chadburn, architect, 6 Stepney Street.

Wrexham.—Proposed thirty artisans' dwellings.

Slaughter-house. (£4,500.)

SCOTLAND.

Arbroath.—Offices, corner of High and Hill Streets, for the Prudential Assurance Company. Mr. Hugh Gavin, architect, 42 Hill Street. Separate trade contractors.

Dalmuir.—Proposed workmen's hotel, Agamemnon Street, for the Benbow Hotel Co., Ltd.

Dunfermline.—Proposed model cottages, for the Carnegie Trustees.

Wishaw.—High school. Mr. F. J. Steel, architect, Main Street.

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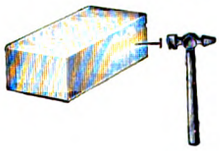
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THE
Architect and Contract Reporter.
FRIDAY, MARCH 5, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

ABBOTS LANGLEY.—March 9.—For erection of two pairs of semi-detached cottages near Bedmond, in the parish of Abbots Langley, for the Watford Rural District Council. Deposit £1 1*s.* The Council Offices, 9 Market Street, Watford.

ALVERTHORPE.—For erection of a warehouse at Bective Mills, Alverthorpe, Yorks, for Messrs. Harrap Bros. (Whole tenders only.) Mr. W. Wrigley, A.R.I.B.A., architect and surveyor, 2 King Street, Wakefield.

ANDOVER.—March 17.—For contract No. 1 (erection of a Council school for 353 children at Andover) or contract No. 2 (heating installation, "Gould" system), for the Hampshire County Council. Deposit £2 2*s.* for contract 1, £1 1*s.* for contract 2. Mr. A. L. Roberts, architect to the Education Committee, The Castle, Winchester.

BINGLEY.—March 10.—For addition to offices, Main Street, for the Urban District Council. Mr. H. Bottomley, engineer and surveyor, Town Hall, Bingley.

BIRMINGHAM.—March 16.—For alterations to the Council school in Aston Lane. Send applications and £2 deposit by March 1 to the Finance Department of the Education Office, Council House, Margaret Street, Birmingham.

BOLTON-UPON-DEARNE.—March 15.—For erection and completion of 293 houses and eight houses and shops, for the Bolton-upon-Dearne Urban District Council. The work will be let in two contracts—viz.: (Contract No. 1) 99 dwelling-houses of three types and three dwelling-houses and shops in Furlong Road, Bolton-upon-Dearne; (2) 194 dwelling-houses of three types and five dwelling-houses and shops on Barnsley Road, Goldthorpe. Deposit £2 2*s.* for each set of quantities. Messrs. Garside & Pennington, architects, Ropergate, Pontefract.

BRADFORD.—For all trades in erection of a block of business premises in the centre of Bradford. Messrs. J. Young & Co., architects, 62 Market Street, Bradford.

BRIDGWATER.—March 9.—For erection of a temporary hospital at the Dock, Bridgwater, for the Town Council. The Borough Surveyor, Municipal Buildings, Bridgwater.

BRISTOL, &c.—March 12.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of ordinary works and repairs to the buildings in their charge in the districts of Bristol, Leeds, and at the Duke of York's School, Dover, during one year from April 1. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

CHELMSFORD.—March 22.—For erection of an engine house and incidental works at their Admiral's Park Waterworks, for the Town Council. Deposit £2 2*s.* Mr. P. T. Harrison, A.M.I.C.E., borough engineer, Municipal Offices, Chelmsford.

DERBY.—March 9.—For erection of two buildings for providing bathing accommodation at the workhouse; also for painting the outside premises of the workhouse and infirmary, for the Guardians. Mr. F. C. Coulthurst, architect and surveyor, 4 Albert Street, Derby.

DEWSBURY.—March 11.—For construction of internal fittings in connection with the Health Department at the Town Hall, for the Corporation. The Borough Surveyor, Town Hall, Dewsbury.

DRIFT.—March 6.—For erection of an addition to a dwelling-house at Drift. Mr. J. E. Hosken, Drift, Cornwall.

GLOUCESTER.—March 11.—For preparing pumping station site and construction of approach road at Ketford; erection of pumping station, buildings, and foundations at Ketford; supplying and laying mains from pumping station to reservoir at Madam's Wood; forming site and building reservoir at Brand Green, for the Gloucester Corporation. Deposit £5. Messrs. Fox, Moore, Bateman & Fox, 5 Victoria Street, Westminster, or Mr. R. Read, surveyor, Guildhall, Gloucester.

HAMBRIDGE.—March 13.—For erection of a Council school at Hambridge, for the Somerset Education Committee. Messrs. Samson & Colthurst, architects, 1 Hammet Street, Taunton.

HOLME-ON-SPALDING MOOR.—For the bricklayer's, joiner's and plumber's work required in erection of a detached house in Howden Road. Mr. A. Firth, Hyde Park Road, Halifax.

HORNCHURCH.—March 16.—For erection of public offices, for the Parish Council. Deposit 10*s.* Mr. W. C. Allen, clerk, Council Office, Hornchurch, Essex.

IRELAND.—March 9.—For building sixty-nine labourers' cottages in the following districts, for the North Dublin Rural District Council—viz.: Blanchards Town district, 3; Coolock district, 18; Drumcondra rural district, 6; Finglas district, 6; Howth and Howth Junction district, 36. Mr. J. O'Neill, clerk, North Brunswick Street, Dublin.

LITTLE THURROCK.—March 8.—For alterations and additions to administration block at the Hospital, Long Lane, Little Thurrock, two miles from Grays Railway Station, for the Orsett Joint Hospital Board. Mr. C. M. Shiner, architect, Gate House, High Street, Grays.

LIVERPOOL.—For (*a*) plastering and cementing at Kirkdale Homes, Westminster Road; (*b*) building alterations at the rating valuer's office, Brownlow Hill, for the Select Vestry. Mr. G. W. Coster, clerk to the Select Vestry, Parish Offices, Brownlow Hill, Liverpool.

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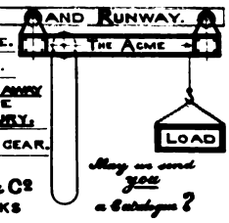
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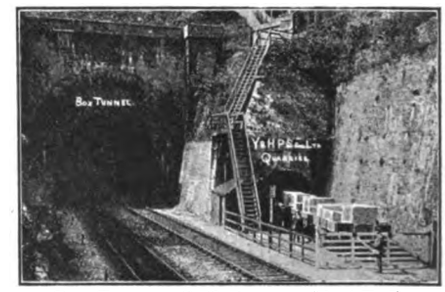
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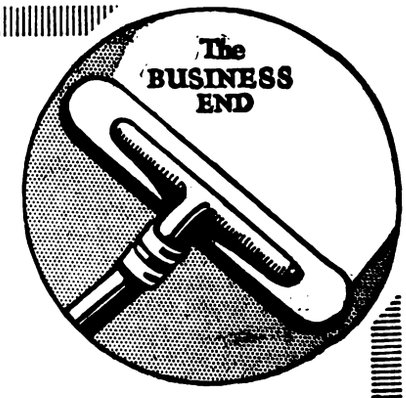
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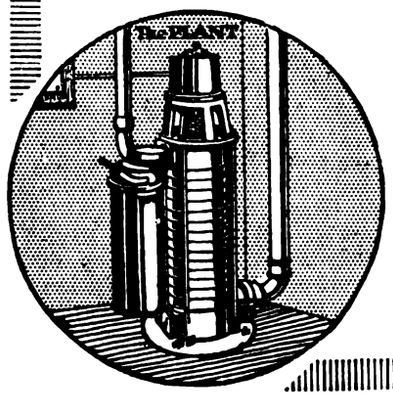
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LONDON.—March 9.—For erection of baths and washhouses and a branch library on a site in Evelyn Street, Deptford, for the Deptford Borough Council. Forward names and addresses by March 9 to Mr. A. Purkis, town clerk, Town Hall, New Cross Road, S.E.

MACCLESFIELD.—March 13.—For erection of a chimney 90 feet high at the public baths, Davenport Street, for the Baths Committee. Mr. S. C. Baggott, borough surveyor, Town Hall, Macclesfield.

PATCHWAY.—For erection of a Baptist Chapel. Messrs. La Trobe & Weston, F.R.I.B.A., architects, 1 Unity Street, Bristol.

MORLEY.—March 16.—For the whole of the trades (in one contract) for erection of coal store at the gasworks. Mr. F. Turner, B.Sc., A.M.I.C.E., borough engineer and surveyor, Town Hall, Morley.

NORTHAMPTON.—March 15.—For building 20 cottages at Hollowell, for the Corporation. Deposit £2. The Waterworks Office, Fish Street, Northampton.

NOTTINGHAM.—March 11.—For erection and completion of 27 cottages and two blocks of tenements on the site adjoining Pennyfoot Street and Newington Street, for the Housing Committee. The contract will also include the demolition of the buildings now standing between Fredville Street and Fisher Gate. Deposit £2. Mr. A. Brown, M.I.C.E., city engineer, Guildhall, Nottingham.

PEMBURY.—March 22.—For erection and completion of an engine house, engine foundations, &c., at the pumping station, for the Tunbridge Wells Corporation. Deposit £2 2*s*. Mr. W. H. Maxwell, A.M.I.C.E., borough waterworks engineer, Town Hall, Tunbridge Wells.

PORTLAND.—March 10.—For erection of Council offices at Portland, for the Urban District Council. Send applications and £2 2*s*. deposit by March 10 to Messrs. Petter & Warren, architects, Yeovil.

READING.—March 8.—For the construction of a new timber bridge across the Portman Brook at the Institution, 344 Oxford Road, Reading, for the Guardians. Mr. W. H. Oliver, clerk, 32 Thorn Street, Reading.

READING.—March 18.—For the construction of a public sanitary convenience for women on land belonging to the Corporation adjoining the White Hart Hotel in St. Mary's Butts, for the Corporation. Mr. J. Bowen, A.M.I.C.E., borough engineer and surveyor, Town Hall, Reading.

SCOTLAND.—March 11.—For mason, carpenter, slater, plaster, plumber, glazier, and painter works of new village public school to be built at Alford, for the Alford School Board. Messrs. D. & J. R. M'Millan, architects, 105 Crown Street, Aberdeen.

SMALLBURGH.—March 12.—For alterations at the Workhouse, for the Guardians. Mr. F. Davies, clerk, North Walsham, Norfolk.

SOUTHALL.—March 23.—The Southall-Norwood Urban District Council propose erecting 42 houses at Western Road and 12 houses at Norwood Road, and invite tenders for the direct supply of the necessary materials required in the construction of such houses; also for the labour required in the erection in various trades. Mr. R. Brown, M.I.C.E., M.I.Mech.E., F.S.I., &c., engineer and surveyor, Town Hall, Southall.

STEVENAGE.—March 22.—For erection of eight cottages at Stevenage, for the Stevenage Urban District Council. Deposit £1 1*s*. Mr. W. Onslow Times, clerk, Council Offices, Stevenage.

TREDEGAR.—March 15.—For erection of a caretaker's lodge at the new cemetery, Cefn Golen, for the Tredegar Urban District Council. Mr. W. Lloyd Roach, surveyor to the Council, Bedwellty House, Tredegar.

TWEEDMOUTH.—March 16.—For erection of six cottages at Tweedmouth, for the North-Eastern Railway Co. Mr. A. Pollard, architect, Irving House, Westgate Road, Newcastle-on-Tyne.

WALES.—For erection of a house at Abernant Road, Cwmgorse, Gwauncaegurwen, for the Committee of the Tabernacle Congregational Church, Cwmgorse. Mr. G. Thomas, architect, Tydfil House, Cwmgorse, Glam.

WALES.—March 10.—For erection of a new house and alterations to farm buildings on the Braint small holding, Llansadwrn, for the Anglesey Small Holdings Committee. Mr. J. Owen, F.R.I.B.A., architect, Menai Bridge.

WALES.—March 10.—For erection of an office for the engineer at the electric light station, Llandudno, for the Llandudno Urban District Council. Mr. W. T. Ward, deputy engineer and surveyor, Town Hall, Llandudno.

WALES.—March 15.—For erection of a large picture house and shops at Pontypridd, for the Pontypridd Palladium Co. Deposit £2 2*s*. Messrs. Arthur Ll. Thomas & Gomer S. Morgan, architects and surveyors, Pontypridd.

WALES.—April 7.—For erection and completion of proposed Council schools at Llandyfrydog and Ty Mawr, and for additions, alterations, and repairs to the Council schools at Pentraeth, Llanfachreth, Llaingoch (Holyhead), and Llechylched (Bryngwran), for the Anglesey Education Committee. Mr. J. Owen, F.R.I.B.A., county architect, Menai Bridge.

WALLASEY.—March 18.—For the construction of (*a*) workshop and men's room, and (*b*) foundation for gas engine and electric generator at the Gasworks, Limekiln Lane, for the Corporation. Mr. J. H. Crowther, engineer and manager, Limekiln Lane, Wallasey.

WEST DIDSBURY.—March 9.—For sanitary fittings, concrete, and wood floors at the hospitals at the institution, West Didsbury, near Manchester, for the South Manchester Board of Guardians. Mr. D. S. Bloomfield, clerk, Guardians' Offices, All Saints', Manchester.

TENDERS.

BROMSGROVE.

For erection of an infants' school in Stourbridge Road.

J. & A. BRAZIER, Bromsgrove (*accepted*)	£2,476	0	0

COALVILLE.

For the erection and completion of business premises, comprising three shops with showrooms and workshops over, in Belvoir Road, for the Coalville Working Men's Co-operative Society, Ltd. Mr. T. I. MCCARTHY, architect, Coalville, near Leicester.

Willetts & Sons	£7,536	0	0
Kershaw & Sons	7,195	0	0
Dennett & Ingle	7,165	0	0
Orton & Co.	6,999	0	0
Fox	6,996	0	0
Barker & Son	6,975	0	0
Maule & Co.	6,930	0	0
Chapman	6,850	0	0
Long & Son	6,775	0	0
Moss & Son	6,761	18	6
Cole & Sons	6,732	0	0
Corah & Sons	6,719	0	0
Perks & Son	6,693	0	0
GRIFFIN BROS., Hugglescote (*accepted*)	6,625	0	0
Architect's estimate	6,900	0	0

EGHAM.

For the erection of a secondary school for boys at Egham, for the Surrey Education Committee.

W. WATSON, Ascot (*accepted*)	£9,694	0	0

HUDDERSFIELD.

For the erection of a weaving shed at Marsh Mills. Messrs. J. BERRY & SONS, architects and surveyors, Huddersfield.

Accepted tenders.

A. Hirst & Co., mason, Honley, Huddersfield.
Thomas Arthur & Son, joiner, Lockwood, Huddersfield.
Thomas Armitage, plumber, Huddersfield.
Sam Dixon, plasterer, Marsh, Huddersfield.
W. & P. Holroyd, painter, Huddersfield.
T. Sutcliffe & Sons, slater, Linthwaite, Huddersfield.
J. E. Dyson, concreter, Lindley, Huddersfield.
France & Brook, cast-iron work, Linthwaite, Huddersfield.
Abm. Pullman & Sons, steelwork, Halifax.
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LONDON.

For enlarging the Haverstock Hill School for physically defective children, St. Pancras, for the London County Council.

General Building Co.	£3,539	0	0
Chessum & Son	3,350	0	0
Neal	3,133	0	0
Monk	3,046	0	0
McCormick & Sons	2,982	11	2
Brand, Pettit & Co.	2,869	0	0
Lole & Co.	2,807	13	0
A. Roberts & Co.	2,765	0	0
Chas. Wall, Ltd.	2,765	0	0
Bovis & Co.	2,760	0	0
ALLEN FAIRHEAD & SON, Enfield (*accepted*)	2,681	0	0
Architect's estimate	2,875	0	0

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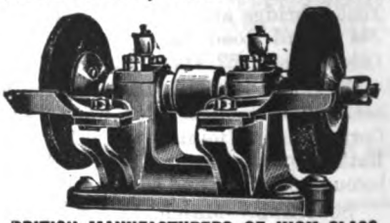
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LONDON—*continued.*

For re-building the Winchester Street School, Finsbury, for the London County Council.

Chessum & Son	£12,752	0	0
Rowley Bros.	11,220	0	0
Lawrence & Son	10,972	0	0
Perry & Co. (Bow)	10,929	0	0
L. H. & R. Roberts	10,928	0	0
Brand, Pettit & Co.	10,312	0	0
Patman & Fotheringham	10,271	0	0
Maddison	10,171	0	0
Monk	10,170	0	0
Willmott & Sons	10,117	0	0
McCormick & Sons	10,043	0	0
C. P. Roberts & Co.	9,986	0	0
W. F. Blay	9,970	0	0
ALLEN FAIRHEAD & SON, Enfield (*accepted*)	9,737	0	0
Architect's estimate	10,127	0	0

For fitting up the main kitchen and scullery at the Maudsley Hospital, for the London County Council.

McDowall, Stevens & Co.	£574	0	0
Richmond Gas Stove and Meter Co.	550	0	0
Summerscales, Ltd.	523	5	0
J. & F. May	513	0	0
Moorwoods, Ltd.	498	10	0
Bradford & Co.	485	0	0
FALKIRK IRON CO., LTD., Falkirk (*accepted*)	462	14	0

For enlarging the Wix's Lane School, Clapham, by about 256 places.

Wylie & Lochhead	£6,792	15	1
Rice & Son	6,681	0	0
W. Downs, Ltd.	6,378	0	0
King & Son	6,065	0	0
Moss & Sons	6,015	4	11
Holliday & Greenwood	5,939	0	0
W. E. Blake. Ltd.	5,929	3	4
J. & C. Bowyer	5,897	0	0
Triggs & Co.	5,770	0	0
LOLE & Co., Trafalgar Square, Chelsea (*accepted*)	5,364	0	0
Architect's estimate	5,598	0	0

SCOTLAND.

For the erection of offices at the gasworks, for the Corporation.

Accepted tenders.

Easton & Laird, masons	£327	0	0
H. Dall, joiner	252	10	0
D. Langlands, plumber	40	0	0
J. Fyfe, painter	28	14	0
D. Masterman, plasterer	25	0	0
A. Shepherd, slater	21	13	6

STAFFORD.

For the erection of the Staffordshire Farm Institute on the Stour Road, near Stafford, for the Education Committee.

T. GODWIN, Hanley (*accepted*)	£19,663	0	0

WISBECH.

For the erection of twenty-eight pairs of cottages, for the Marshland R.D.C. Mr. E. WALKER, architect and surveyor, Wisbech.

Wilkinson & Co., Elm, Wisbech—4 pairs	£1,520	0	0
Jas. Parker, Upwell, Wisbech—4 pairs	1,406	0	0
Elworthy & Co., Upwell, Wisbech—3 pairs	1,317	9	0
G. J. West, Wisbech—3 pairs	1,258	10	0
E. R. Lankfer, Walsoken, Wisbech—3 pairs	1,243	10	0
Wilkinson & Co., Elm, Wisbech—3 pairs	1,230	0	0
Wilkinson & Co., Elm, Wisbech—2 pairs	840	0	0
H. W. Reeder, Terrington St. John, Wisbech—2 pairs	828	0	0
R. Eggleton, Terrington, King's Lynn—2 pairs	810	0	0
A. S. Horsley, West Walton, Wisbech—2 pairs	797	10	0

THE Welsh National Museum Council sitting on Monday at Cardiff consented to a proposal made by the assessors that the four blocks of sculpture on the south front of the new building should represent the pre-historic period, the classical period, the mediæval period, and the modern period respectively. This modification of the original arrangement was agreed to.

SIR WILLIAM MATHER ON THE DUTY OF DIRECTORS AND SHAREHOLDERS.

SIR WILLIAM MATHER, Chairman, presided at the annual meeting of Mather & Platt, Ltd., on Friday, February 26, at the company's works, Manchester.

Comparing the results of the business during 1914 he said that in his opinion they were very satisfactory. A dividend of 10 per cent. on the ordinary shares, plus a bonus of 2½ per cent., free of income tax, had been declared. In arriving at their statement of profit during the past year the directors had thought it prudent to first secure the business against unforeseen contingencies that might arise in consequence of the unprecedented situation created by the sudden change from long years of universal peace to that of war on a colossal scale. They, therefore, decided not to add to the already large reserve fund, but to carry forward a larger sum than ever before—£66,838. The directors did not anticipate a revival of active business with the countries engaged in war to any great extent during the war. The firm had contracts booked with such countries, but would be unable to execute them until after the war. Meantime their works were fairly well employed and they had undertaken certain contracts which the Government placed with well-equipped firms.

It was a popular delusion that Government contracts were exceedingly profitable. Such contracts had to be completed under tremendous pressure, and it was the duty of contractors on patriotic grounds to make every effort, regardless of cost, to supply the Government with what they needed. And by strain and stress and all possible overtime the work had to be done to meet the demands. Another consideration which would affect the profits of most industrial concerns during the war was the indisputable fact that the cost of food had risen and might still rise to a price that would sensibly affect the workpeople of the country by seriously diminishing the purchasing value of wages. This was a grave question which employers and all concerned with industrial undertakings should meet sympathetically and patriotically with the desire to lighten the burdens of their workpeople. The working classes, being most numerous, furnished most of the fighting men. Their families would feel most acutely the pinch of excessively dear food. It was not right to ask sacrifices of them for the common weal greater than those which all other classes made according to their means. Charitable relief of the working classes was least effective and most demoralising. The greatest help that could be given to workpeople was to provide them with work at a living wage, adjusted to the cost of living frugally and carefully with self-denial and self-restraint on their part during the war. It seemed to him that company directors and shareholders should frankly face the facts affecting the people's food supply. Large dividends during war times should not be a primary consideration with them. They should first try to provide as much work as possible at wages that would enable workmen to reasonably nourish themselves and their families, having due regard to the avoidance of waste and self-indulgence. Business profits earned under those principles might be small, but shareholders ought to bear the sacrifice of part of their dividends as their contribution towards the relief of the universal suffering which the war had caused. Strenuous efforts should be made to keep the industries of the country alive during the war. Violent trade disputes on account of wages amounted to high treason at such a time. The war would pass all the sooner if those concerned in the industries of the country held well together, and after the war a long, lasting peace, with great prosperity, would repay them for the sacrifices they had now to make in order to secure the victory.

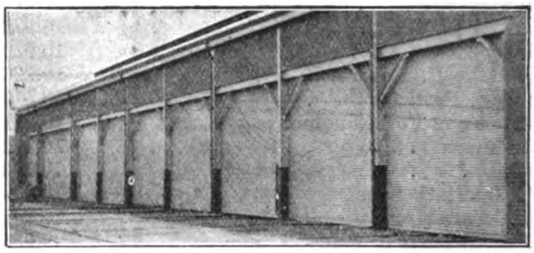
THE Shipping, Engineering, and Machinery Exhibition which was to have been held at Olympia from July 23 to August 14 has been postponed until 1916 or 1917. Mr. Charles H. Luke, the secretary of the Exhibition, is to be congratulated on the fact that he has succeeded in settling what had become a very difficult matter—the holding of an exhibition which might possibly have been a failure, or its postponement. The amount for space let is being paid into a trust fund for the purpose of carrying out the proposed Exhibition some time next year or the year following. Mr. Luke, the exhibitors, and the Olympia Company are to be congratulated on the satisfactory manner in which a very difficult problem has been solved, and the result will secure a prosperous undertaking soon after the termination of the war.

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ECONOMY IN REINFORCED CONCRETE.

AT a recent meeting of the Concrete Institute a paper was read by Mr. T. A. Watson, Assoc.M.Inst.C.E., entitled "Economy of and in Reinforced Concrete."

While great savings can be made on retaining walls, it is generally not economical to employ reinforced concrete for the external walls of buildings, as brick walls up to a thickness of 14 inches are cheaper, but that when walls have to be thicker than this reinforced concrete comes in. As under the proposed London County Council Regulations nearly all external walls need not exceed 14 inches in a framed building, it is probable that reinforced concrete walls for this purpose will soon cease to be used from the point of view of economy.

With regard to the economy of reinforced concrete-framed buildings outside the London area the economy is very considerable; inside the London area the London County Council, by their regulations, propose to reduce it as much as possible. There are, however, opportunities to effect savings over a steel-framed building even in London. It is often possible, allowing for variations in design, to make a saving of 10 to 20 per cent. by constructing in reinforced concrete instead of in steel. Yet at the present day there are many buildings being built in London as steel-framed structures which could more economically be built in reinforced concrete, and that therefore there must still be many people in London who have yet to be convinced of the desirability of the latter form of construction. Other cases may, of course, not show quite so favourably, but on the other hand there are cases which may show more favourably.

There is another factor which enters into the question of building operations of all kinds, and that is time. Many people are of opinion that the quickest form of construction is steel construction. If drawings have been prepared a long time in advance so that the steel framework has been fabricated beforehand and is ready for delivery the moment it is required it may be that the steel frame is the quicker, but this is not always so; and starting from the point, *i.e.*, the time when working drawings of both reinforced concrete frame and steel frame are ready, generally some time after the foundations of the building have been started, it is possible in ordinary times to obtain steel bars in fourteen days from that date, but it generally takes six weeks to obtain built-up stanchions so that at the beginning reinforced concrete gets a four-weeks' start.

Again, in steel-framed buildings many architects use coke-breeze concrete or broken brick concrete between the R.S.J. fillers. Neither of these are water-tight; reinforced concrete 4: 2: 1 is practically so. In a building constructed some years ago seven storeys high the plaster work was started on the ceilings of floors below the fourth before the seventh floor was finished, and as each of the remaining floors took about a fortnight to do, another month or six weeks was gained on the steel-framed building as asphalt on the roof would have been necessary to prevent rain coming through the breeze or broken brick floors and spoiling the plaster.

While there are still many to be converted to a belief in reinforced concrete there are some enthusiastic admirers of the material who desire to use it in every possible way, and on every possible occasion. One of the ways in which it is used in which the author said he was not convinced of its economy was in pitched roofs which need formwork both sides of the concrete, and asphalt or some other waterproof covering to keep the rain out. These roofs have generally very thin slabs, say 3 in. thick at most, and then the concrete costs a fabulous amount to get it in place, especially if the building has a series of saw-tooth roofs running from side to side or end to end with no flat passage-way to take concrete to the centre. These 3-in. slabs are generally supported by very light reinforced concrete trusses with sometimes diagonal members, and the roofs altogether constitute a nightmare to the contractor, who in a thoughtless moment undertook to construct one. Roofs like these should last for ever, so there may be economy in the long run, though they ought to cost more in the first instance than steel trusses, &c.

It seems hardly necessary to mention that in the construction of bridges, say up to 300 ft. span at least, reinforced concrete is nearly always the most suitable material. There are, of course, exceptions, but the mere question of the cost of maintenance of a steel bridge seems enough to condemn it.

The question of maintenance should also be enough to decide an architect or engineer to choose reinforced concrete for the construction of, say, small water-towers, coal-bunkers, gasometer-tanks, or any similar structure heretofore built in steel, and exposed to atmospheric conditions, even if reinforced concrete is not cheaper in the first instance.

With regard to timber structures the same applies; and in addition the relatively greater resistance to destruction by fire makes the advantages of reinforced concrete so apparent that one wonders why timber is employed in the construction of wharves at all.

But turning to the other side—viz., economy in reinforced concrete, the author said he would like to emphasise a point which in these strenuous days of competition seems to be overlooked, or rather ignored, and that is the enormous amount of waste which occurs through one of the methods adopted by architects to obtain cheap prices for the carrying out of work. An architect prepares the general design of a building and sends sunprints of same to four, five, or even six different firms of specialist designers, who in turn prepare each their reinforced concrete scheme and send out to five or six or even more contractors for prices, involving a total of some thirty or forty persons, all of whom spend money and time in tendering &c. Much valuable time is also wasted which might otherwise be spent in the construction of the building whilst the various prices and schemes are being compared and adjudicated on. This puts an initial charge on reinforced concrete which might be avoided if the architect or engineer would only choose his system, or employ an experienced consulting engineer to design the reinforced concrete work, and then send out for prices in the usual way.

Another point which makes for economy in reinforced concrete, but has more to do with design, is the number of steel bars that have to be handled. It will be readily understood that it is just as easy to handle a 1⅜-inch-diameter bar 25 feet long as it is to handle one that is only 1 inch diameter, as the weight is immaterial.

Again, in this connection he might point out that the 1⅜-inch diameter bars occupy less space in the width of a beam than the 1-inch diameter bars, and the labour cost on concrete may be reduced by 30 to 50 per cent. by the employment of the larger diameter bar.

Again, with fewer bars there are fewer ends, and in many cases stirrups or shear members to fix, and the smiths' work is correspondingly reduced.

The reading of the paper was succeeded by a discussion, in which the following members took part: Professor Henry Adams, M.Inst.C.E. (President), Mr. Percy J. Waldram, F.S.I., Mr. Percy H. Simco, Mr. Ewart S. Andrews, B.Sc., Mr. Morgan E. Yeatman, M.A., M.Inst.C.E., M.Am.Soc.C.E., Mr. Archibald Scott, A.R.I.B.A., Mr. Habib Basta, Assoc.M.Inst.C.E., Mr. W. A. Green, M.A., B.Sc.Eng., Assoc.M.Inst.C.E., Mr. T. C. Dawson, Mr. W. J. H. Leverton, Licentiate R.I.B.A., Mr. E. F. Etchells, Assoc.M.Inst.C.E., F.Phys.Soc., A.M.I.Mech.E., Mr. J. F. Warden, and Mr. T. A. Watson, Assoc.M.Inst.C.E.

A LOCAL Government Board inquiry was held at Shipley last week relative to the Urban Council's application to borrow £73,000 for the erection of 298 workmen's dwellings on the "garden city" principle. It was stated that there was a great dearth of houses of this class, and although since the outbreak of the war the rate of interest for money had increased, the Council felt that in the interest of the town they ought to proceed with the scheme.

MR. MUIRHEAD BONE has made a drypoint entitled "Piccadilly Circus, 1915," which will be published by Messrs. P. & D. Colnaghi & Obach, for the benefit of the Belgian Relief Fund. There will be 100 impressions at ten guineas each. As Mr. Bone is presenting the plates and Messrs. Colnaghi & Obach the whole of the profits without deductions, the Fund will ultimately benefit to the extent of one thousand guineas.

THE plans for Berwick's new station having been passed by the directors of the North British Railway Company, work will be proceeded with shortly. It is understood that the cost will be between £30,000 and £40,000. A feature of the scheme is an island platform between the up line and the down line. This will be 800 feet in length, and it will be reached from the booking hall by means of a bridge; and there will also be an hydraulic luggage lift. This scheme includes up-to-date waiting-rooms and offices. The first portion to be executed will be the new bridge carrying the great North Road over the railway.

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PATENT SPECIFICATIONS PUBLISHED FEBRUARY 25, 1915.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 21,630. Sept. 25, 1913.—Williams & Williams, Ltd., and A. H. Williams, Reliance Works, Chester. Shaping metal bars.

1,826. Jan. 23, 1914.—A. E. Muirhead, 130 Kilmarnock Road, Glasgow. Transmission of heat and apparatus therefor.

2,072. Jan. 26, 1914.—Dated under International Convention Jan. 28, 1913. Lucien Maurice, 4 Avenue Haubigny, Paris. Heat accumulators.

2,244. Jan. 28, 1914.—J. A. Calantar, 237 Uxbridge Road, W. Road surfaces.

2,604. Jan. 31, 1914.—A. F. Berry, 27 Woodville Road, Ealing. Electrical heating apparatus suitable for cooking, water-heating, and like purposes; and 2,605, Jan. 31, 1914. Means of apparatus for heating water and other liquids.

2,607. Jan. 31, 1914.—J. M. Downer, 172 King Street West, Toronto. Sand papering and grinding machine.

2,661. Feb. 2, 1914.—G. M. Park, Roden, Gorse Road, Blackburn. Apparatus for cooling clinker in the manufacture of cement and other like cooling apparatus.

2,681. Feb. 2, 1914.—W. M. Dodds and G. A. Stoner, 26-28 Emerald Street, Bedford Row, W.C. Hot-water circulating and supply systems.

2,695. Feb. 2, 1914.—W. H. Owen, 19 Home Park Road, Wimbledon. Means for heating steam generators.

2,718. Feb. 2, 1914.—F. H. Johansson, Herrhagen 153, Karlstad, Sweden. Process of manufacturing posts and boards of waste or rough-edged wood.

3,048. Feb. 5, 1914.—H. G. Nicholson-Lailey, Kamari, Bythesea Road, Trowbridge. Pipes and method of joining same.

8,046. March 30, 1914.—Gottfried Bodmer, Kusnacht, Switzerland. Self-closing valves.

8,403. April 3, 1914.—J. S. Porter, 30 Welbeck Road, Bolton, Lancs. Roof glazing.

3,625. Feb. 12, 1914.—O. G. Trigg, 62 Adeline Street, Newport, Mon. A new cement.

4,840. Feb. 25, 1914.—E. A. Hansen, Nordre Fasanvej 32, Copenhagen. Pumps for raising and delivering water and other liquids.

5,659. March 5, 1914.—P. G. Donald, of Rownson, Drew & Clydesdale, Ltd., 225 Upper Thames Street, E.C. Rain-water pipes.

12,907. May 26, 1914.—F. W. Smith, 5 Thornbury Avenue, Southampton. Fire-extinguishing alarm and indicating apparatus for use on board ships and in large buildings.

14,334. June 15, 1914.—The Falkirk Iron Company, Ltd., and Robert Kidston, all of Falkirk. Kitchen ranges.

18,648. Aug. 13, 1914.—H. C. Hahn, Gayford, Sibley, Minnesota, U.S.A. Fire escapes.

18,847. Aug. 20, 1914.—Planet Foundry Company, Ltd., and James Learmouth, Planet Foundry, Guide Bridge, near Manchester. Adjustable grate fronts for domestic fireplaces and the like.

23,261. July 23, 1914.—W. B. Young, 1 Weir Street, Falkirk. Ranges or grates.

Any of the above specifications may be obtained from J. D. Roots & Co.

THE Swansea Corporation, at a meeting last week respecting the proposed erection of 500 houses on the Town Hill estate, decided "that the Housing and Town Planning Committee be instructed to obtain a tender for the erection of 100 houses on Town Hill, such tender to include an option to the Corporation to ask for the erection of 400 further houses in lots of 100, and that in the event of the committee being unable to obtain such a tender they be instructed to accept a tender for the erection of 500 houses." During the debate, which lasted several hours and was in private, it transpired that the average price, according to tenders received, and including the three classes of houses proposed to be erected, was about £243 per house. Since the outbreak of the war the price has increased by 20 per cent. Between the highest tender received just before the war and the lowest the difference was £80,000 for the 500 houses, and it is now feared that the war increase will mean, if the houses are to be made self-supporting, increased rentals of as much as 2*s.* 6*d.* a week. To meet this difficulty the Government is to be approached with a view to a subsidy being granted.

VARIETIES.

THE Hemsworth Rural Council have accepted the tender of Messrs. Swift Bros., South Elmsall (£2,360), for improving the sewage works.

MESSRS. LAVINGTON, LTD., have received the contract for carrying out additions to the Waddon Waterworks for the Croydon Borough Council. The tender amounted to £2,793.

THE Carlisle Education Committee have adopted a scheme for the erection of an open-air school at Blackhall at an estimated cost of £3,480. The plans were prepared by Mr. H. C. Marks, M.I.C.E., the city engineer.

THE Nottingham Corporation determined last week to persevere with the project for making Nottingham a port, at an estimated cost of £150,000, by widening and deepening the Trent, and to advance £10,000 towards the construction of the Newark nether lock.

A MEETING of the Management Committees of the Unions affiliated to the London Building Industries Federation is to be held to-day (Friday) to discuss the question of approaching the London Master Builders' Association for an immediate advance in wages and improved working conditions.

A LECTURE on the history and architecture of St. Bartholomew-the-Great, West Smithfield, will be given on Saturday, March 20, and repeated on March 27 at 2.30 P.M. No charge will be made for visiting the crypt and cloister, but there will be a collection for the Restoration Fund, which is in debt. The thirteenth century window recently discovered will be then opened out to view.

LA SOCIETE DES ARCHITECTES DIPLOMES PAR LE GOUVERNEMENT, in virtue of a decision of their general Assembly Law, conferred upon the President of the Architectural Association the right to be a corresponding member during his term of office. Mr. Gerald C. Horsley, F.R.I.B.A., Past-President Architectural Association, has by the same decision been elected a corresponding member *a titre définitif*.

THE *Gazzetta Ufficiale* (Rome) of February 12 publishes the text of regulations (in Italian) governing the construction of emergency dwellings as a result of the recent earthquake. These regulations may be consulted by United Kingdom firms interested at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

A SUPPLEMENTARY Estimate under the heading of Civil Services is concerned with the requirements of the Trustees of the National Gallery. The sum in question is £6,600, which is required to pay export duty to the Italian Government on the pictures of the Layard Collection now in Venice. It was not anticipated that duty would be exacted, but it has been found that the payment of duty is necessary under Italian law.

AT the meeting of the Institution of Civil Engineers on February 23 the members received an intimation that H.M. the King of the Belgians and also Admiral Lord Fisher of Kilverstone, First Sea Lord of the Admiralty, had consented to accept election as honorary members of the Institution. The election was effected forthwith by acclamation, and the addition of these illustrious names to the small group of distinguished men who form the Institution's roll of honorary members is a source of much satisfaction to the members.

TRADE NOTES.

MR. HERBERT H. GRUNDY, the head of the well-known firm of John Grundy, Ltd., heating and ventilating engineers, of City Road, N., and Tyldesley, near Manchester, has been elected President of the Institution of Heating and Ventilating Engineers. The name of the late John Grundy will always be remembered in connection with scientific heating by hot air. Mr. Herbert Grundy is continuing the family tradition, his name being associated with a special system of electric heating.

WE are informed that the walls of the Police Station at Worcester, which were frequently damp, have been cured by a rendering of Pudloed cement. The Office of Works are users of "Pudlo," and among the latest works for its inclusion is the Dundee new Post Office; the cement mortar and all renderings are to be waterproofed with "Pudlo." A brickwork basement at the Queen's Hotel, Eastbourne, has been converted into a tank. The brickwork was given a Pudloed cement lining, and now holds several thousand gallons of water. The architect reports that not a sign of damp has shown through.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, March 15.

Royal Institute of British Architects : Paper entitled "English Monuments," by Mr. James Williams, at 8 P.M.

Royal Society of Arts : Cantor Lecture I., entitled "House Building," by Mr. M. H. Baillie Scott, at 8 P.M.

Wednesday, March 17.

Manchester Society of Architects : Paper entitled "Some Aspects of Romanesque Architecture," by Professor A. C. Dickie, M.A., A.R.I.B.A., at 6.30 P.M.

Carpenters' Hall : Paper entitled "Rheims—a Typical French Cathedral," by Mr. Banister F. Fletcher, F.R.I.B.A., at 7.45 P.M.

Thursday, March 18.

Edinburgh Architectural Association : Paper entitled "Mote, Castle, and Peel—an Evolution Illustrated," by Mr. George Neilson, LL.D., at 8 P.M.

Concrete Institute : Paper entitled "The London Building Acts, with some suggested Amendments," by Mr. Osborn C. Hills, F.R.I.B.A., District Surveyor for the Strand, at 7.45 P.M.

London University : Paper entitled "Town Planning in Antwerp, Past and Future," by M. Alfred Portielje (Hon. Sec., Royal Society of Architects, Antwerp), at 5.30 P.M.

SUB-AQUEOUS FOUNDATIONS.

THE most ancient form of under-water foundations was probably that of dumping in loose stones until the surface of the water was reached, and the masonry could then be commenced without the necessity for any method of excluding the water. Though this method of "rip-rap" or *pierre perdue* has remained in use even to the present time, its obvious disadvantages have led to the more prevalent use of other methods making for greater certainty and economy of material.

In much of the older civilisation in tropical and sub-tropical countries, where the streams are dry beds for many months in the year, suitable foundations were easily made without trouble from water. Even where shallow water prevailed on a rock bottom, the piers of bridges were, withough difficulty, well founded in the shallowest places, the bridge often winding across the stream in serpentine form, as in the case of the ancient bridge over the River Karun, at Shuster, in Persia. The necessity of finding shallow water in which to build piers has often influenced the course of a bridge and its localisation on the site of a primeval ford.

Ancient bridges of large spans were often the solution of the difficulty of founding piers in mid-stream, as in the instance of that over the River Adda, at Trezzo, built by order of the Duke of Milan some time prior to the year 1390. The span of this bridge was 251 feet, covered by a single arch of granite in two courses.

Developments in forming foundations for piers in water-courses led to the use of open caissons; the use of piles with a capping of coarse concrete about the tops; the use of piles as an enclosure or encaissement; the use of coffer dams, and the more modern method of pneumatic caissons. Another expedient in ancient times which was an avoidance rather than a solution of the difficulties of sub-aqueous foundations in bridge-building was diversion of the river channel either to a new course under a bridge erected in advance or to a temporary channel.

By the Romans open caissons and piles were both used. The former consisted of rough baskets formed of branches of trees, weighted with stones to sink them, and after sinking were filled with loose stones to near low-water level, where the masonry could be commenced. In this way some restraint was enforced on the haphazard assortment of material known as rip-rap. The use of open caissons has continued till modern times, with the substitution of boxes for baskets. These were used at Blackfriars Bridge and Westminster Bridge.

The Roman use of piles is explained by Vitruvius, who says, "Foundations should be carried down to solid bottom, if such can be found, and they should be built thereon of such thickness as may be necessary for the proper support of that part of the wall standing above the natural level of the ground. They should be of the soundest workmanship and materials, of greater thickness than the walls above. . . . The intervals between the foundations brought up under the columns should be either rammed down hard or arched, so as to prevent the foundation piers from swerving. If solid ground cannot be come to, and the ground be loose or marshy, the place must be excavated, cleared, and either alder, olive, or oak piles, previously charred, must be driven with a machine as close to each other as possible and the intervals between the piles filled with ashes. The heaviest foundations may be laid on such a base."

This method of encaissement as used by the Romans was accompanied also by that of using piles at distances apart depending on the nature of the bottom, but with their heads not necessarily to the same level, and encasing them in coarse concrete. They also, no doubt, adopted, too, the Venetian method of driving piles, which were whole and unwrought tree-trunks, as close together as they could be got over the whole surface to be covered by the foundations. Certain it is that included amongst the equipment of their highly efficient skill in construction the Romans included a thorough knowledge of piling and its possibilities.

The deficiency of the methods known generally used by the Romans lay in the lack of opportunity they presented of seeing or making a careful examination of the bottom on which the foundation was to be placed. The removal of this deficiency was effected by the use of coffer dams and diving-bells.

Coffer dams may be defined as water-tight enclosures, from which the water is pumped to expose the bottom and permit the laying of foundations. As usually constructed, the enclosure is formed of guide and sheet piling in double ranks, tied together by cross beams and filled in between with clay puddle. Whilst in shallow and quiet water the formation of a fairly water-tight coffer dam is a matter of no great difficulty, the operation becomes formidable with great depth and rapid current, more particularly in rivers that are frozen in winter.

The most remarkable example of coffer dams ever constructed is probably those for the piers of the Buda Pesth suspension bridge over the Danube, of which Mr. W. Tierney Clark was the engineer. The water was assumed at 10 feet deep at low tide, 20 feet at high tide, with 12 feet of sand and gravel to be removed to expose

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the clay on which the piers were to rest. Four rows of piles were driven around the area, the rows 6 feet apart, and filled in between with a puddle of clay mixed with sand and gravel. But even this solid mass did not prevent leaks, and further piling had to be driven to stop them. Great cut-waters in the dams were constructed to resist the enormous pressure of the winter ice.

The difficulty of forming water-tight walls to coffer dams in severe cases is not the only drawback to their use. It frequently happens that water comes in under the walls of the coffer dams and from springs in the bottom, even when the precaution has been taken to remove as much as possible of the soft stuff by dredging. Thus in modern work the coffer dam has lost much of the favour with which it was regarded in the earlier half of the nineteenth century.

A simple form of coffer dam, which may be generally used when the conditions are such as to admit of any coffer dam being advisable, is the crib. This consists of a couple of bottomless wooden boxes, one inside the other, the space between being afterwards filled in with puddle, or even of one box. The boxes can be formed afloat of boards or heavy planks laid one on top of another and spiked together. When built they are tied across at intervals and sunk.

Diving-bells date back to a considerable period, and may be regarded as the forerunners of the modern pneumatic caisson. The earliest account we have of the use of compressed air is given by John Taisner of Hainhault, born in 1509, who went to Toledo with the Emperor Charles V., where he saw two Greeks let themselves down under water in an "inverted cauldron" with a light, and return to the surface without getting wet; but the diving-bell used by Smeaton at the Hexham bridge in 1778 is really the first use of compressed air on bridge foundations of which we have an authentic account.

The detailed arrangements of many examples, especially of those occurring in the United States, of the methods we have indicated will be found excellently explained with many diagrams in a book* by Charles Evan Fowler, recently issued by John Wiley & Sons in New York, and Chapman & Hall in London.

NOTES AND COMMENTS.

WAR is undoubtedly disastrous to artists of all kinds, probably more than to any other class of the community, and almost the only recompense they receive is to be found in the execution of war memorials. We note that the crop of these has already commenced in the inception of a scheme for the erection of a granite Memorial Cross, designed by Sir George Frampton, which *The Weekly Dispatch* is presenting to the bravest village in the United Kingdom—the village which has sent the highest percentage of its population to fight for our country.

In the meantime it is cheering to observe that the example of *The Weekly Dispatch* in presenting a national memorial is being followed by schemes for the erection of county memorials on the same lines. Mr. F. C. Arkwright, Deputy-Lieutenant for Derbyshire, has already offered to give a permanent memorial to the Derbyshire village which sends the highest percentage of men to the Colours; and now the Lincoln Chamber of Commerce has decided to award a cross to the county village which shows the best recruiting returns to the end of March.

Mr. Halsey Ricardo has practically illustrated in his work the possibility of enduing modern buildings with colour, and is, therefore, qualified to urge on his brother architects the desirability of introducing more extensively the use of colour as an essential component of modern architecture. In a lecture to the members of the Birmingham Architectural Association he introduced his theme by asking what would the average man of taste say if coming upon Trafalgar Square from Whitehall he found that during the night, and without any warning, Nelson's Column had been placed on a grass plot, that all the bronze plaques and the lions had been gilt, that the shaft of the column had been painted navy blue, the bronze capital wholly gilded, and Nelson himself and his clothes painted to resemble as closely as possible what the hero looked like just before the battle of Trafalgar? His first impression would be that an outrage had been committed. The ordinary man in the street, not knowing what to think, would condemn the horrid sacrilege as the simplest and safest way to view it. But to the wholly unsophisticated man there might be something said for this treatment—a treatment that would have been adopted in Babylon, in Egypt, in Greece, in Rome, in Byzantium, and in the Middle Ages. However, he preferred to consider what might be their opportunities for providing special colour decoration for the interior of buildings, and especially their public ones. How were they to find the *corpora vilia* on which to cut their wisdom teeth? He suggested that the class-rooms of the elementary schools were a suitable field for an attempt at forming a school of decorative painters, but it was not proposed that the decorations should be permanent. The attempt should start with a simple scheme. He thought the heraldic treatment of colour was the right treatment to begin on, and the use of heraldic emblems helped to give a picturesque reinforcement to the study of history. Heraldry was a kind of history in shorthand. Various groups of men and women should be formed to undertake this elementary decorative work, and as the standard rose under such practice the more able decorators might be employed to decorate walls on an ascending scale of importance, such as workhouses, infirmaries, hospitals, waiting-rooms of stations. And when the quality of permanence had at last been earned and acquired, they might adorn the walls of public libraries, town halls, museums, and churches.

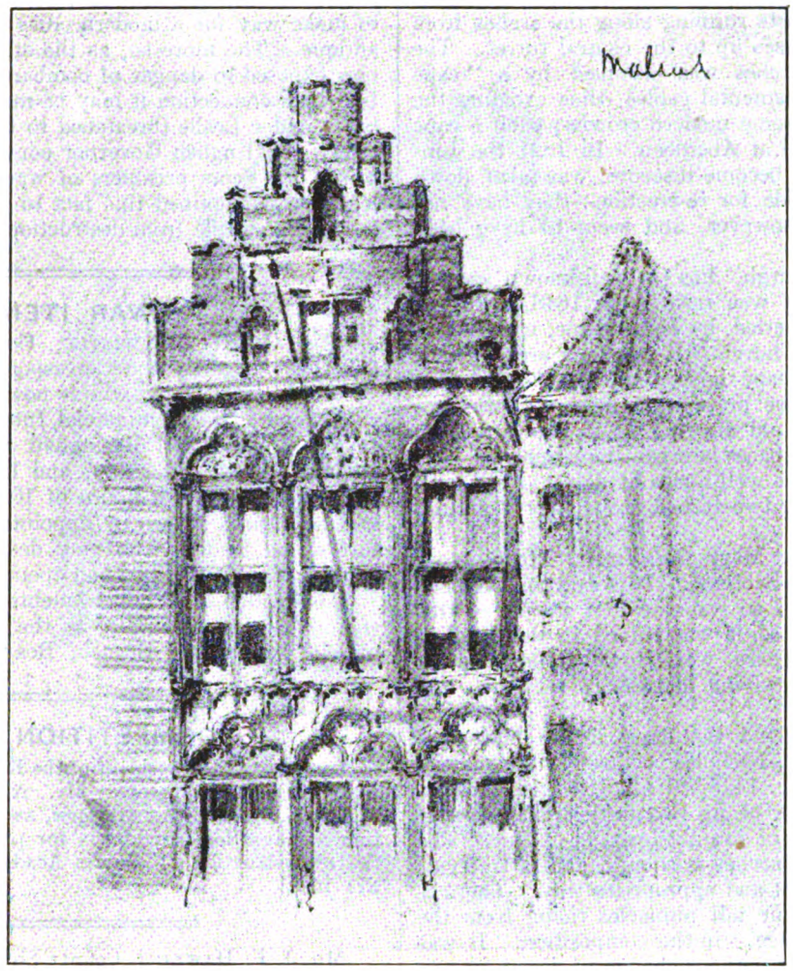
In his course of lectures on town-planning at Birmingham University, Mr. Barry Parker has treated the subject of individuality in towns, a characteristic that is evident in many well-preserved ancient cities, but sadly lacking in modern instances. In explanation of this decadence Mr. Parker has advanced a theory which, we think, is only partly true.

Quoting Aristotle's dictum that "a city is a place where men live a common life for a noble end," he said that a village had been a real community in the past, led by the squire and the parson, with the doctor, the smith, the shopkeeper, and the farmer all taking their allotted place and forming part of an organised community, of which the village was a visible expression, having unity and homogeneity. But when all this gave place to the ideal of "every man for himself," which characterised the nineteenth century, and to the one relationship of employer to employed, there being nothing but meanness to express, the result was mean. The hope for the future was that democratic ideals would build up a state of society based on relationships with something noble in them, capable of being nobly expressed.

Whilst there may be a possibility, in the event of Germany's defeat, of a return of some of the artistic masterpieces which have been looted for their money value, it will, we fear, be otherwise with the small bronze statues in the Petit Sablon Square in Brussels, which a correspondent of the *Morning Post* says have been

* *A Practical Treatise on Sub-Aqueous Foundations*, including the coffer-dam process for piers and dredges and dredging, with numerous practical examples from actual work. By Charles Evan Fowler, Consulting Civil Engineer, Member of American Society of Engineers, &c. &c. Third edition, revised and enlarged. (New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd. 31s. 6d. net.)

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AT MALINES.—From a Sketch by Mr. HUON A. MATEAR, F.R.I.B.A.

removed and sent to Germany. They will no doubt be returned in the form of shells or other deadly missiles.

The bronze statues in question were forty-eight in number. They surrounded the monument of Counts Egmont and Horn, and represented the artistic and industrial guilds of the sixteenth century.

Bell towers separated from the churches to which they are supposed to be an adjunct have been the cause of much speculation to archæologists and of legend to the populace, but in the case of that at Launceston, Mr. C. L. Hart Smith, F.S.A., puts forward an explanation that may be also elsewhere the correct one. In his brochure, "The Borough of Dunhevet, Cornwall," he shows that the tower was really a campanile, or bell tower, and used for observation purposes; that it stood in its own ground, and was not a part of the church dedicated to St. Mary Magdalene; that it was a borough building, owned by the Corporation, which supplied a clock and the bells and paid the ringers; and that the Corporation occupied the ground floor with its machines for weighing wool, yarn, and other things. The tower was also used as a store, and complaint was once made that the occupier kept hens and barrels of hogswash in it! Upon the land between the tower and the church the Corporation built a Council Chamber, which in 1880 was acquired by the church authorities and converted into a vestry.

Mr. Hart Smith marshals his facts and cites his authorities in a manner that compels conviction, and few possess the hardihood to question the one or dispute the other. In a preface he has much that is interesting to say with regard to the ancient name of Launceston, and insists that the history of the borough can never be properly studied unless it is ever borne in mind that its Corporation was and still is lord of the manor of Dunhevet.

Proposals for the removal of Glasgow's Tolbooth Crown have excited interest in the city on the subject of crown steeples, and in the *Glasgow Herald* Mr. H. L. Honeyman contributes an interesting article, in which he says:—

Beginning our survey at the North, and taking the crowns in geographical order, first comes that at King's College Chapel, Aberdeen, erected for Bishop Elphinstone between 1500 and 1505. This steeple at one time possessed 10 bells (including the heaviest in Scotland), and the crown had to be repaired on several occasions. In 1633 it was blown down: "Bot the crown was quicklie afterwards restored in a better forme," and bears the inscription "George Thomson, Architect, 1634." Its rather lumpy outline may be due to Mr. Thomson's improvements. It has two arches—*i.e.* two arches cross its base from corner to corner, like the diagonal ribs of a groined vault, the intersection being marked by a pinnacle or turret—in this case a stone crown. A crown of four arches has two additional ribs crossing from centre to centre of its sides.

A crown, with similar details to St. Giles', Edinburgh, was designed for the tower of Dundee Church. Its arch springers still exist, and some years ago its completion was proposed but unfortunately not undertaken.

The steeple of Culross Abbey so closely resembles that of Linlithgow Church that a similar termination was probably intended. If so, it is not known to have been erected. The tower of St. Michael's Church, Linlithgow, contains a bell dated 1490, but is generally stated to date from c. 1530. It bore a two-arched crown of

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very elegant composition, with an unusual feature in the shape of tracery parapets running along the arches from the large angle buttresses up to the central turret. The space beneath the arches was occupied by a "cape house" with four ornamental gables, thus avoiding the empty appearance of some modern crowns; such a cape house formerly existed at Aberdeen. In 1821 the Linlithgow crown, having become insecure, was taken down and its pieces laid aside for re-erection—they have not yet been re-erected, however, and seem to have been allowed to disappear.

St. Giles', Edinburgh, has a well-known crown. First built c. 1500, it was restored in 1648, with the quaint details of that period, by John Milne, architect of the Edinburgh Tron Church. It has four arches, and, although it had no cape house, the openings in its buttresses show that the present platform roof was not intended; indeed one old drawing of it shows a high leaded roof filling the spaces between the stone ribs. At Pinkie House there is a well-house of date c. 1613 with a small but interesting two-arched crown worth noting, though not a steeple.

The church of St. Mary the Virgin, Haddington, had the finest crown in Scotland. It is said to have been erected c. 1450, and if so was the first steeple of this kind. If ever completed it was ruined in the English invasion of 1548. There were four arches, as at St. Giles', and the surviving details are very rich and beautiful.

Of crowns in England the finest is the large and graceful example at St. Nicholas' Church in Newcastle-upon-Tyne, completed c. 1475. Unlike Scottish crowns, this one has the backs of its two lofty arches formed as ogee curves, instead of straight lines, in outline. The steeplet carried by the arches is square, and is traceried and pinnacled in a light and appropriate way. There is no cape house, but four tall pinnacles rising from the sides of the tower replace it in the composition. It was rebuilt last century, but without change of design.

The steeple of St. Mary-le-Bow was destroyed in the Great Fire of London, and little is known of its appearance except that it had a crown of the Aberdeen type, and was probably of large dimensions.

St. Dunstan's in the East, London, has an original and well-composed crown, built in 1698 from designs by Wren. Its two unmoulded arches, with curved extrados, support a graceful obelisk on a composition of intakes similar to those on the hidden flying buttresses of St. Paul's.

Quite out of the crown steeple districts stands the Glasgow Tolbooth tower. Accounts of its history were published when its destruction was proposed a couple of years ago, and its appearance is, or should be, familiar to every citizen. Its details place it as a work of the same school as Heriot's Hospital, Edinburgh, and the Old College, Glasgow. That is, it belongs to the period which separated the earliest Scots Renaissance from the mature work of the Scottish "Queen Anne" style. It shows strong Teutonic influence, probably Dutch—the Town Council consulted a Dutchman when altering Blackfriars Church in the seventeenth century—but it is undeniably "racy of the soil" of Scotland.

In the last half of last century a revival of crown building took place, following the erection of the Wallace Monument at Causewayhead, with its splendidly monumental crown, designed by J. T. Rochhead. Curiously enough, most modern Scots crowns are in the west of Scotland, not the east. Of these perhaps the most notable are the Coats Memorial at Paisley and the Stevenson Memorial at Belmont Bridge, North Kelvinside.

The old Tolbooth crown is remarkable in several ways —*e.g.* it is not near the east coast, it is, with the exception of St. Dunstan's, the only old crown steeple which has never been rebuilt, it contains an interesting carillon, and it is one of our last relics of the seventeenth century. For a considerable period it served, with the aid of a platform built on its south side, all the purposes of a Mercat Cross, and it would be a pity were it removed to make way for a modern cross or replaced by a sham antique. The more so, as the other ancient crowns are now exposed to danger of bombardment from air or sea. In which connection it may be mentioned that when the Scots under Leslie threatened to bombard the Newcastle crown the English Governor converted its belfry into a prison for Scots prisoners of war. He then, or so the legend runs, notified this fact to the besiegers, and thus saved the steeple from destruction!

WAR ITEMS.

Mr. C. A. Birtwistle, Commercial Intelligence Officer in Nigeria, the Correspondent of the Board of Trade for that Colony, who is now on a visit to England, will attend at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., on Wednesday, Thursday, and Friday, March 17, 18, and 19, between the hours of 10 a.m. and 5 p.m., and will be pleased to see by appointment British manufacturers and traders who may desire to consult him regarding trade conditions and openings in Nigeria.

Application for appointments with Mr. Birtwistle should be made promptly to the Director of the Commercial Intelligence Branch, Board of Trade.

COMPETITION NEWS.

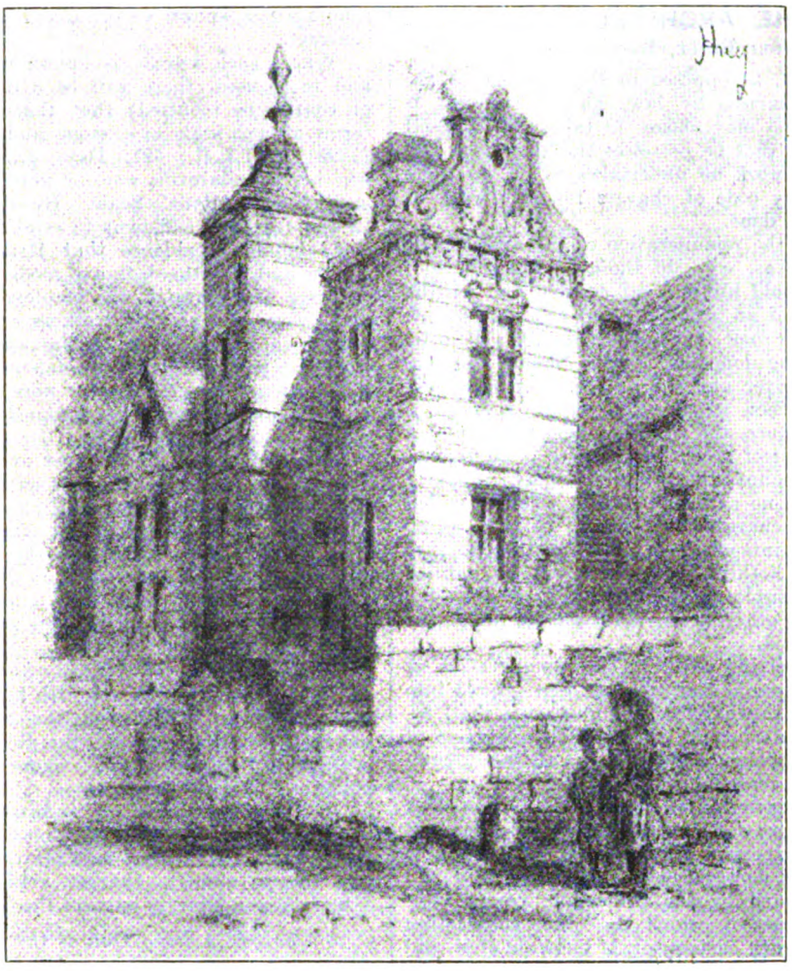
Dundee.—The President of the Royal Institute of British Architects has appointed Mr. A. N. Paterson, M.A., A.R.S.A., F.R.I.B.A., Glasgow, as assessor in the competition amongst local architects for plans in connection with the reconstruction of Harris Academy. The fee is to be £71 10*s*.

Mr. J. F. Hawkins, County Surveyor of Berkshire, had the honour of being received by the King at Buckingham Palace on March 2, to submit the design of the new Albert Bridge between Old Windsor and Datchet. The design was prepared by the County Surveyors of Berks and Bucks, to be constructed on the system of the Trussed Concrete Steel Company, Ltd. Their Majesties expressed their approval. Mr. Hawkins also submitted a design of the proposed bridge between Goring and Streatley.

A recent examination of the Rowley Regis parish registers, dating back to 1539, which suffered considerably from a fire at the parish church in 1913, reveals the fact that some of them have shrunk to exactly half their former size, and are barely legible owing to damage by fire and water. One portion rotted away and had to be destroyed. Two parts were saved because they were not in the chest at the time of the fire. Fortunately the whole series had been transcribed and have since been printed for the Staffordshire Registers' Society.

We regret to announce the death of Mr. Henry Dawson, F.R.I.B.A., of the firm of Henry Dawson & Son, architects, 122 Cannon Street, E.C. He was in his eighty-eighth year, and had retired some years ago. Mr. Dawson commenced practice in 1852 at 122 Cannon Street, afterwards removing to Finsbury Circus, where he remained for upwards of sixty years. A few years ago the firm returned to its original quarters. For twenty-four years he was architect and surveyor to the Salters' Company, and on his retirement from that position in 1905 he was succeeded by his son, Mr. W. Cecil Dawson, who still carries on the practice. Mr. H. Dawson designed for the Salters' Company warehouses in Friday Street and those in Bread Street in the occupation of the Great Northern Railway Company. He also made some additions to Salters' Hall. He acted as architect and surveyor to the Wax Chandlers' and Stationers' Companies, and other Guilds and public bodies, including the Moravian Trust Estates in London. Among his chief works were the London Orphan Asylum, Watford; the Hand-in-Hand Insurance Society's offices, New Bridge Street; alterations to Emanuel School, Wandsworth Common; and numerous warehouses and offices in the City. He was architect for the extension of the Pitt Press, Cambridge, and for the Almshouses at Maidenhead, erected by the late Mr. George Herring.

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AT MALINES.—From a Sketch by Mr. HUON A. MATEAR, F.R.I.B.A.

ILLUSTRATIONS.

HOUSE, REGENT'S PARK, N.W.

THE illustration shows the entrance front of the above house, which was built three years ago for Sir Boverton Redwood, Bart. The walls are faced with Lawrence's bricks of many shades of grey and purple, and the roofs are of Collyweston stone. Internally there is a good deal of oak half-timbering and old panelling, whilst several rooms have modelled plaster ceilings. Messrs. W. H. Maxey & Son, of Sleaford, were the general contractors, and Mr. John C. Pocock acted as clerk of works and also executed the modelling and carving. The architect was Mr. M. H. Baillie Scott.

CAMBERLEY HEATH GOLF CLUB-HOUSE.

THIS building was erected in connection with the already well-known new eighteen-hole golf course for the Camberley Heath Golf Club at Camberley. It is beautifully situated on very high ground.

In execution the plan has been varied to a certain extent. Externally the walls are of brick, covered with white rough cast; the roofs are tiled with hand-made, sand-faced "antique" tiles, made by the general contractors at the Aldershot Brick and Tile Works. The chimney pots are black. The casements, &c., are divided up by stout wood bars into small squares.

Internally the walls are finished with plaster and Hall's washable distemper in light tints, the paintwork being kept a very dark brown throughout. The dining-room has an open timber roof with wood trusses, the timber being stained dark, and the space between the rafters plastered to match the walls.

The principal room is the lounge, and it is so planned that full advantage is taken of the extensive views of the surrounding country. The fire-places have been built up in thin Dutch bricks and roofing tiles to the special designs of the architect.

It has been possible to work the basement at the ground level on the north side owing to the slope of the hill, and in this ample accommodation is provided for the professional, workshops, showrooms, and caddies' rooms. This arrangement works well, and does away with the usual unsightly temporary sheds so often seen erected for these purposes at golf clubs.

The building is heated throughout by hot-water.

The general contractors were Messrs. George Kemp & Co., of Aldershot, who carried out the work under Mr. H. Reginald Poulter, the architect.

The drawing of this building herewith reproduced was exhibited last year at the Royal Academy.

ST. AUGUSTINE'S CHURCH, ADDLESTONE.

THE drawing of this church, which we reproduce this week, was exhibited at the Royal Academy last year.

It was intended that the building should be faced in Bargate stone, with Ham Hill dressings and tracery, but it has now been decided to use brickwork throughout, with the windows built up in specially made moulded bricks for the tracery, &c. The roof will be covered with dark, hand-made, sand-faced tiling.

Internally the walls are to be plastered. The sanctuary and aisles are to have close-boarded barrel ceilings, the nave having an open timber roof, with each pair of rafters trussed. At present it is proposed to carry out only a portion of the entire scheme, comprising the chancel, vestries, organ chamber, and three bays of the nave, filling in the temporary west end with timber, covered with elm weather-boarding. The tower will finish just above the ridge of the nave roof. Messrs. Mardon & Mills, of Farnham, are to carry out the work, and Mr. H. Reginald Poulter is the architect.

STAIRCASE, CHRIST CHURCH COLLEGE, OXFORD.

THIS drawing was made by Mr. Chas. S. Carter during his tour as holder of "The Architect" Travelling Studentship for 1914.

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THE LAW AS TO THE REMUNERATION OF THE ARCHITECT.*

By A. Montefiore Brice, Barrister-at-Law.

Just as the profession, as opposed to the practice of the architect, is not regularised by law, and its pursuit is open to any person who may choose to take upon himself the risk of holding out that he possesses the knowledge and skill required for the work he undertakes to do, so there is no legal or statutory code of charges for such work as he has undertaken and done.

The profession and the remuneration of the architect do not depend on statute as, e.g., do those of the solicitor; but any person may hold himself out as able and willing to undertake the work of an architect, and any such person may sue for and recover some, but not necessarily a definite, remuneration for having done that work. Should the contract between the employer and the architect, or some subsequent contract, whether written or verbal, specify in exact terms or by reference, the charges which the employer shall pay and the architect accept, then there is an express contract as to the amount the architect may properly charge; but if there be no express contract, whether verbal or written, as to such charges, then it will be held, as no professional man can intend or can be required to give his skill and care for nothing, that there was an implied contract between the employer and the architect that the one should give and the other receive a reasonable remuneration for services rendered.

This is the legal doctrine affecting the remuneration of the architect, unless a specific contract has been entered into between the parties as to what that remuneration shall be. In the absence of such a contract, then the remuneration of the architect must be such an amount as in all the circumstances seems fair and reasonable.

Architects have endeavoured on many occasions to show that the scale of charges recognised by the profession has in course of time and experience amounted to a "custom"; but no scale of charges, however widely known within and however generally adopted by the profession, can, if unreasonable, govern a case in which the other contracting party did not know of such custom, or, if knowing of it, did not expressly or impliedly consent to it. Formerly, the practice of the profession in this respect, received perhaps greater attention than it has obtained in more recent years, and in 1869, Lord Romilly, in Attorney General *v.* Drapers' Company (L.R., 9 Eq. 69), said that "the charges of brokers on the transfer of stocks and shares are paid by a commission, and if a similar practice prevails with respect to surveyors' charges I shall not disturb it. It prevents disputes as to amount, and the charges fixed by the scale do not seem too high."

The modern and still prevailing view was put clearly enough by Lord Coleridge, L.C.J., in Burr *v.* Ridout (1893, *Times*, February 22); and followed by the same judge in Farthing *v.* Tomkins (1893), 9 T.L.R., 566; and in Gwyther *v.* Gaze (*Times*, February 8, 1875), by Quain J., who held that an alleged customary charge of 2½ per cent. on the lowest tender, when no tender had been accepted, was unreasonable, and left it to the jury to say what sum would be reasonable. While it is within the province of the jury to assess the amount which would be reasonable, it is the function of the judge to decide as to whether an alleged custom is reasonable. The Courts have always taken upon themselves to consider whether a custom is or is not within the bounds of reason, and if the custom is unreasonable, the Courts have said that they will not recognise it as binding on people who do not know it and have not consented to act upon it. Perry *v.* Barnett (1885), 15 Q.B.D., 388. per Brett, M.R., at p. 393. And in Debenham *v.* King's College, Cambridge (1884), 1 T.L.R., 170, it was held by Wills, J., that there is no custom between surveyors and their clients by which the former can base their acount on Ryde's Scale of Fees for Surveyors' Charges; and a surveyor, in the absence of a special agreement, is only entitled to charge a fair and reasonable sum for his services.

If, however, there is contained in the contract (as there should always be) a clause dealing expressly with the remuneration of the architect, no difficulty need arise; neither should there be any difficulty when the amount and scale of the charges is agreed by reference to be in conformity with the scale of the Royal Institute of British Architects or with Ryde's Scale or some other method of computation known to or accepted by the parties to the contract.

Where such a scale is known by the employer to exist and to be used, there will be a presumption (which may, of course, be rebutted) that the employment is upon the terms of such scale or custom, and in Buckland *v.* Pawson (1890), 6 T.L.R., 421, Day, J., said the question was whether the plaintiffs were or were not employed upon what was known as Ryde's Scale. He did not think the evidence in the case was sufficient to establish a custom, but there was abundant evidence that Ryde's Scale was generally known and was the ordinary mode of remuneration of surveyors. The plaintiff was employed by defendant, who, it was sworn, had employed others and had himself been employed on Ryde's Scale. There was overwhelming evidence that the persons whom the defendants entrusted with the duty of employing a surveyor were well acquainted with the custom, and it must be assumed that the plaintiff was employed on Ryde's Scale.

Similarly a custom, however unreasonable, is binding on the parties if the contract is entered into by them upon the terms of such custom. Thus in Blackburn *v.* Mason (1893), 9 T.L.R., 286 C.A., it was held by the Court, per Lord Esher, M.R., that a party could only be bound by an unreasonable custom when at the time of dealing on the market the custom was made known to him and he had agreed to be bound by it; and see Cooke *v.* Eshelby (12 App. Cas. 271).

There should be no difficulty as to the scale of remuneration if the architect agrees with his employer that his payment shall be made upon the basis of the schedule of charges as drawn up by the Royal Institute of British Architects, supplemented, where necessary, by Ryde's Scale.

The charges which an architect in the course of and arising out of his profession may be called upon to make are many and various, and may now be considered under two heads, namely, charges arising out of the Building Contract and charges outside the Building Contract.

Charges Arising Out of the Building Contract.

According to the Schedule of the Royal Institute of British Architects and the practice of the profession, the usual remuneration of the architect is a 5 per cent. commission upon the total cost of the works executed under his directions, and this commission is payment for the necessary preliminary conferences and sketches, approximate estimate when required, the necessary general and detailed drawings and specifications, one set of tracings, duplicate specification, general superintendence of works, and examining and passing the accounts, *exclusive* of measuring and making out extras and omissions.

The commission does not include payment for services rendered in connection with negotiations relating to the site or premises, or in supplying drawings to ground or other landlords, or in surveying the site or premises and taking levels, making surveys and plans of buildings to be altered, making arrangements in respect of party walls and rights of light, or for drawings for and correspondence with local and other authorities, or for services consequent on the failure of builders to carry out the works, or for services in connection with litigation or arbitration, or in the measurement and valuation of extras and omissions.

But the practice of the profession shows that such commission of 5 per cent. is inadequate in the case of works of less cost than £1,000, or of highly decorated buildings, or of alterations and additions, and in such cases the architect's fee is one which is reasonable in the special circumstances of each case.

If the architect sends in an estimate or submits drawings for approval and they are not accepted or approved or used, no claim for remuneration in respect of the estimate or drawings, in the absence of an agreement to the contrary, will arise. Thus in Moffat *v.* Laurie (1855), 15 C.B., 583, the architect made surveys and plans for the employer without charge upon the understanding that he should be appointed the architect upon the land being sold for building purposes, but the employer died and his executors put it out of their power to sell the land for building purposes, and it was held that he could recover nothing, inasmuch as the event on the happening of which alone the plaintiff was to be entitled to remuneration for his services, namely, the disposal of the land for building purposes, had not happened.

In Moffat *v.* Dickson (1853), 13 C.B., 543, the architect

* A Paper read before the Society of Architects on Thursday, March 11.

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agreed to examine the site proposed for a lunatic asylum, and to prepare preliminary probationary drawings for the approval of the visitors' committee, and subsequently to prepare the whole of the working drawings, estimates, and specifications for the asylum, and to accept £437 10*s.* for those services. The probationary drawings were not approved, and upon that ground it was held that the architect could not recover.

With regard to competition drawings everything turns on the precise terms of the invitation to compete, and in the absence of any undertaking to pay, the drawings must be regarded in the light of estimates for which no charge can be made. Thus in Ward *v.* Lowndes (1859), 28 L.J., Q.B., 265, the architect sent in drawings for a covered market house upon the invitation of the advertisement of the Commissioners, who also offered a premium of £20 for the best design in the event of the maker of such design not being selected as the architect. The plaintiff sued on the ground that his was the best design, but he failed in his action.

But if the plans or estimates or preliminary work is used at all, even if the architect is not engaged to superintend the work, he can recover on a *quantum meruit*. Thus in Lindley *v.* Wilson (1880), 8 Ct. of Sess. Cas. 4th Ser. (Rettie) 289, an architect prepared detailed plans, and though the buildings were not proceeded with, the employer used the plans to his advantage in dealing with a purchaser of the ground. The employer denied liability on the ground that the plans had been furnished upon the footing of there being a competition; but it was held that assuming the fact to be as stated by the defence, it still lay in the employer to prove that the employment was gratuitous, and this he had failed to do. The Court held that the architect was entitled to reasonable remuneration, and Lord Shand added (p. 293): "If I had been of opinion that the case was one of a competition of plans between the two architects, and the defendant had afterwards thought fit not to build at all, I should have had great difficulty in holding that he would have been entitled to say to the competitors, 'You shall be paid nothing for the plans and labour you have bestowed on me.' My impression is that each of them would have been entitled to receive a *quantum meruit*." But the defence of competition was negatived by the Court.

Charges Outside the Building Contract.

The architect may be properly called upon to render a variety of services in no way necessarily connected with the usual building contract under which he plans, designs, and supervises the erection or alteration of a building. He may, for instance, be called upon to survey ground suitable for building, or survey buildings, or measure up completed work, or value houses, lands or work, or draft bills of quantities, and act as an arbitrator or as a witness in Court or at an arbitration.

In exercising any of the foregoing functions he is, in the absence of an express or implied agreement for a fixed or ascertainable sum, only entitled to charge what is reasonable. He may, if he choose, charge upon a scale known to and approved by his profession; but, if it be unreasonable, he cannot impose it upon a client who is ignorant of it, or who, upon the making of the contract, could not rightly be supposed to contemplate such a method of computing payment.

See Debenham *v.* King's College, Cambridge (supra). Brocklebank *v.* L. & Y. Railway (1887), 3 T.L.R. Burr *v.* Ridout (supra). Gwyther *v.* Gaze (supra). Perry *v.* Barnett (supra).

But if the employer could reasonably be supposed to know of the scale and of the custom of charging in accordance with it, so that an implied agreement might be inferred, then the architect could sustain an action for payment based upon such a scale (see Buckland *v.* Pawson (1890), 6 T.L.R., 421).

In examining and settling accounts between a builder and a building owner, the architect can recover a reasonable fee for his time and trouble, but the Court will not (except perhaps when the amount of the account is small) permit a charge based upon a percentage of the total amount of the account (Upsdell *v.* Stewart (1794), 2 Peake, N.P., 255).

Nor, in qualifying for giving evidence or for actually giving evidence, can an architect base his fees upon the value of the subject matter in dispute. Coleridge, L.C.J., in Drew *v.* Josolyne (1888), 4 T.L.R., 717, declared that he had never sanctioned and never would sanction the supposed rule that surveyors should be paid for their evidence by a percentage on the sum in dispute rather than by a computation of the work they had done. In that case the surveyor employed as an expert witness had charged £136 for qualifying, and this amount had been reached by calculating a percentage on the work measured. The Master had struck out £106, and allowed the witness £30 for qualifying himself, and £3 3*s.* a day for attendance during the arbitration, and, on appeal, the Master's decision was upheld.

In measuring up deviations, &c., and in the absence of an agreement to the contrary, the architect is entitled by the custom of his profession to charge a sum over and above his commissoin of 5 per cent. (if such payment by commission is agreed) for doing such work.

In practice the amount is added to the builder's account, or, rather, to the certificate given by the architect to the builder, and this has the effect of putting the architect in the unsatisfactory position of inspecting his own work and certifying for it. But though the charge is added to the builder's account and presented by him to the employer for payment, yet this practice does not entitle the architect to sue the builder for the amount in the event of the employer refusing or neglecting to pay the sum in question. For although as a method of practice the payment has been included in the builder's demand, yet in essence the charge is one for which the employer is responsible, for the work of measuring up deviations and extras by the architect or the surveyor is a work which is obviously for the protection and benefit of the employer and serves as a check upon the builder. It is, therefore, useless for the architect to sue the builder, except for money had and received for the use of the architect. Beattie *v.* Gilroy (1882) 10 Ct. of Sess. Cas. 4th Ser. 226.

The charges of the architect are paid variously, but generally according to agreement and by periodical instalments.

It is a legal principle that if a contract is entered into to carry out an entire work for a complete sum, then the right to that payment does not arise until the whole work is itself completed. If an architect enters into such a contract as this, he runs a serious risk of getting nothing at all. For if he is unable by illness or other cause to finish the work he has undertaken to do, he is by that contract entitled to nothing.

If there is no such contract, then the architect may recover payment as the work progresses, for unless a contrary agreement can be shown, a man is entitled to be paid as soon as he has done any work agreed to be paid for, just as, in the absence of an agreement to the contrary, a vendor is in law entitled to receive the cash of his purchaser in simultaneous exchange for his goods.

Loose language in agreements has on many occasions deprived the servant of his hire. Thus, where a person working for a committee agreed to be paid by the committee on the terms of its resolution that "any service to be rendered by W. shall be taken into consideration, and such remuneration be made as shall be deemed right," it was held, when he brought an action for reasonable remuneration, that the committee was the sole judge as to whether any, and, if so, what remuneration should be payable, and that the plaintiff, in consequence, should be non-suited (Taylor *v.* Brewer (1813), M. & S., 290). But if the employer has agreed to pay some remuneration, then the architect is entitled to be paid one that is reasonable (Bryant *v.* Flight (1839), 5, M. & W., 114).

The intervention of a condition will determine the time of or the right to payment; as in Moffat *v.* Dickson (supra), where payment depended on approval which was not given or as in Moffat *v.* Laurie (supra), where payment depended on the land being sold by the employer for building purposes, and the land was not so sold.

Should the employer who has entered into a contract with the architect for certain work refuse or neglect to proceed with such contract, the architect will then be able to sue for damages for the employer's breach of his contract, and the measure of his damages will be all the sums earned but not paid before the breach and all the future profits which it is reasonable to suppose he has lost because of the breach. In Farthing *v.* Tomkins (1893), 9 T.L.R., 566, an architect prepared plans for a hotel, but owing to the financial incapacity of the employer the proposed building was abandoned, and the architect, failing to obtain his fees, brought an action for them, and it was held that he was entitled to recover fair charges for the work which had been done.

In Prickett *v.* Badger (1856), (1 C.B.N.S., 296, and see Spratt *v.* Dornford, *Times*, December 1, 1862), it was held

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that when an agent has done that for which he was employed, but the principal refuses or neglects to avail himself of the agent's work, the agent is entitled to sue for a reasonable remuneration for his work and labour, and in such a case a contract to pay what is reasonable is implied by the law; it is not a question for the jury.

The architect is not entitled to payment when his services have been unskilfully performed, or though skilfully performed, have proved to be of no use for the purpose for which he has been employed. Lord Ellenborough, C.J., laid down the legal principle in Farnsworth *v.* Garrard (1807), 1 Camp., N.P., 37, where he said that "the plaintiff is to receive what he deserves. If there has been no beneficial service there shall be no pay; but if some benefit has been derived, though not to the extent expected, this shall go to the amount of the plaintiff's demand, leaving the defendant to his action for negligence. The claim shall be co-extensive with the benefit." And Bayley, J., in Duncan *v.* Blundell (3 Stark 6), said: "When a person is employed in a work of skill the employer buys both his labour and his judgment; he ought not to undertake the work if it cannot succeed, and he should know whether it will or not; of course it is otherwise if the party employing him choose to supersede the workman's judgment by using his own." (See also Hill *v.* Fetherstonehaugh (1831), 7 Bing, 569, per Tindal, C.J., at p. 571, and Alderson, B., at p. 573; Bracey *v.* Carter (1840), 12, A and E., 373; and Hunt *v.* Wimbledon Local Board (1878), 4 C.P.D., 48, Bramwell B., at pp. 53 and 54.)

Where a professional man makes an estimate, which turns out to be incorrect to a considerable amount through his omitting to examine the ground for the foundations of the work, he is not entitled to recover anything for his plans, specifications, or estimates made for that work, for he is negligent either in not himself making the examination or in trusting to the inaccurate information of others. Whether he has used due diligence or not is a question for the jury, and if he went on the statements of others that is no excuse, as it is his duty to ascertain what are the facts or to report to his employer that he only goes on the information of others, or that the facts have not been ascertained. (Moneypenny *v.* Hartland (1824), 1 C. & P., 352, and see Whitty *v.* Lord Dillon, 2 F. & F., 67, and Nelson *v.* Spooner, 2 F. & F., 613.)

On the other hand, where the question of what is a reasonable sum to pay an architect on work done, *i.e.*, in a case where there is no express contract or the contract has been abandoned and he is suing on a *quantum meruit*, is under consideration, evidence may be given that an architect is a man of exceptional professional skill, qualification or experience, and if this is proved the reasonable fees should be higher than in the case of a person with less or inferior qualification, for it follows that if the employer has chosen a man known for his special degree of skill it is a fair presumption that he chose him for that reason, and that there was an implied undertaking to pay fees in some true proportion to the services expected. Moule, J., in Bird *v.* M'Gaheg (1849), 2 C. & K. (N.P.), 707, held that in an action for payment on a *quantum meruit*, where the plaintiff sued for a larger fee than had been tendered to him, evidence of skill, in order to show the reasonableness of the larger claim, was admissible.

The fact that an architect exercises his lien over his plans and detains them does not disentitle him to sue for the payment for the same, provided that he has given his employer reasonable facilities for inspecting and approving them. Nor is he unable to sue for and recover a proper price, even though he detained the plans when asking for a larger price. He is always entitled to recover for work, labour, and materials, on proof of the performance of the work and of the employer's having had a reasonable opportunity of inspection, for his contract is to perform the work satisfactorily and to give the employer a reasonable opportunity of inspecting and ascertaining its correctness. As soon as he has fulfilled this contract and can prove it he may maintain successfully an action for the debt without foregoing his lien (Hughes *v.* Lenny (1839), 5 M. & W., 183, 192, 193).

MESSRS. W. & T. R. MILBURN, FF.R.I.B.A., architects, of Sunderland, have prepared plans for rebuilding the Cardiff Empire Theatre at a probable cost of £38,000. The work is to be commenced immediately after Easter by the contractors, Messrs. E. Turner & Sons, of Cardiff.

ROYAL ACADEMY LECTURES: ARCHITECTURE.—IV.

THE final of the course of four lectures which Professor E. S. Prior, M.A., A.R.A., gave this year at Burlington House before the students of the Royal Academy was entitled

THE TWO ERAS OF FLEMISH PAINTING AND SCULPTURE.

In his opening remarks Professor Prior explained that he intended to deal with what, in any general history of the arts, is the outstanding distinction attaching to the fifteenth-century artists of the Low Countries, in that they recruited, or at any rate first conspicuously captained, the revolution of the arts—a revolution which has altered all the aspects of art right down to the present day. That is to say, the then conditions of art in Flemish cities first brought into being "artists" in our sense of the term—craftsmen who, to use the modern cant term, practise art for art's sake. To thirteenth-century sculptors or painters there had to be a necessity of practical use in every object of art; our present-day art in itself acknowledges no purpose of practical necessity, and is understood not to do so.

This organisation of sculptors and painters into a profession of artists was all of a piece with those organisations of stylists in architecture and furniture which gained a monopolist position. For the first time we find sculptors and painters, like Van Eyck, becoming men of consequence, or, as Memling, amassing fortunes and taking rank as wealthy citizens. The gist of the difference between this new estimate and that of mediæval art was that art had become in the fifteenth century clearly saleable, whereas in the thirteenth century it had no money value. Why? Because in the thirteenth century to every craftsman as his right were the magic power of beautiful creation, the style of beautiful creation, the practice of beautiful creation. Nowadays they are so very individual—this power, this style, and this practice. In the fifteenth century performers began to be picked out from the general body of artizans and employed by patrons like the Dukes of Burgundy, not as craftsmen, but as "artists" by repute. The National Gallery portrait which is called "Arnolfini and his Wife" is signed by J. Van Eyck; it is the only one of his pictures so signed, and the first modern picture attested by signature.

The accounting of personality as the merit of sculptor or painter was a new field of art. It was accompanied by significant changes in the vehicles by which they used their faculties. As to painting, there was what is called the discovery of the Van Eycks—the practice of using oil to give depth and brilliancy to colour beyond what could be got out of distemper painting. The use of oil had been known all through the Middle Ages; but what the Van Eycks brought into use was the method of mixing oil with their colours, so that they could be applied with a brush in the same way as tempera. Hitherto painting had been either manuscript illumination or wall decoration. But now the picture, as we call it, became possible—an article that could be a private possession and that could be a fancy subject outside the conditions of church service books or church wall. Portraits could be portraits not for any moral or religious use, but just for the joy of personal representation.

Turning to sculpture, we can see that a similar change in the technique or, as we may call it, the tactics of the sculptor rounded off the discovery that personal artistic genius could, ipso facto, equip the artist. No longer essentially conditioned as a building craftsman, he could undertake figures of objective interest; he had entered on that career of individual distinction by producing what we call, in auctioneer's phrase, an objet d'art. And straightway subject ceases to be of practical purpose for the sculptor: what is now of importance is the display of the powers of the artist. At the starting point of mediæval art the meaning, the symbolism, the religious instruction conveyed by the sculptural working of stone had made the whole purpose of the sculptor. To-day for our dilettante sculpture the meaning of the subject has no reality for the artist; only the manner of his handiwork has become the object of effort. Halfway was the distinct crisis in this long evolution, when in 1400 the Duke of Burgundy, for his Chartreuse at Champmol, instead of native craftsmen, engaged a whole set of personal artists from his newly acquired Flemish dominions. Quickly the collector of artists was to be succeeded by the collector of artists'

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works. Collections of statues and pictures appear in the sixteenth century. A collection of works of art means each piece taken from its place: whereas the position of a work of art was that which made the purpose of it in the mediæval view.

Symbolic truth was the only real truth of nature to Byzantine and Romanesque artists. The ideal or universal appearance was the real truth to the thirteenth-century Gothic artist. To the fifteenth-century Flemish artist it was individual accidental reality that was true. To each age is its own view of truth; and just as natural and true, just as real as our present-day scientific realism, were Romanesque symbolism, Gothic ideality, and the Flemish naturalism or "lyrical realism." The truth of this lyrical emotion in things was so evident to men of the fifteenth century that for the next two hundred years the motives and settings of the Flemish realists passed into the imagination of North-Western sculpture and painting with the wide diffusive energy of a popular minstrelsy. Like a popular minstrelsy, it had two essential qualities; one was that of emotion, and the other of pageant. It was the display of a popular drama. Not introspective analysis, but active stage managing, was its Truth. It may fairly be said that when we stand before Flemish sculpture and pictures we are spectators, and the whole world of the fifteenth century is in array before us—a world of extraordinarily rapid and picturesque transformation scenes, a continuous pageant in which expressed itself the mediæval sense of splendid show that in every generation had been obtaining a deeper colouring.

The painting of the Flemish fifteenth-century masters discovered the secret of aerial perspective and used it for the first time since what is called the illusion painting of the Romans. Up to then representations of buildings and landscape had often been necessary as giving locality for the scenes and subjects painted on church walls or in the miniature of the illuminations. But such architecture or scenic backgrounds are pictorial devices to give atmosphere. It was the office of the fifteenth-century Flemish painters to make backgrounds part of the craft of representation. The furniture carvers had already introduced architectural details in the same way to give the sense of distance. The Van Eycks are reckoned as the earliest painters of panels in which this scheme of illusion was deliberately introduced into painting.

The middle of the sixteenth century was the crisis when the painting of great church walls was over, when paintings on church furniture were out of demand. The artist was now like Teniers—he paints a tavern scene and calls it "The Release of Peter," because in the corner is an angel and Peter. He had passed out of the service of mediæval dogma. But equally note, he had passed out of that of architectural ornament. He was become as free of material association as a poet or a musician, for whatever his subject it was the art of his handling that he practised, and that made the whole sum of this practice.

Just as pattern books promulgated the ornaments of architecture and made possible for anybody the Renaissance designs, so did the publication of engravings promulgate the pictorial art. But while in the old public uses of painting the colour was the essential value, the engraving gave to the public something else: that was line and mass composition. So accrued to the painting art not that which had been its emotion, but a new and more intellectual interest—that which lies in uncoloured composition, tone, distinction, values—art for art's sake.

Professor Prior, in summing up, said that in a general way in his lectures he had described Flemish style as the quality of richly executed furniture, the consummate craftsmanship of varied material for the purpose of splendid internal display. This, its strength of special quality, has been exhibited not monumentally, as in the Italian, nor architecturally, as in the French art. Even externally its buildings have a big sense of furnishing rather than of monumental disposition. Rather than monumental force, it has a picturesqueness as its note of composition; it has been strong in colour and in varied form; but it has always been a full-blooded picturesqueness, not a sentimental taste, but a virile practical passion of art. But human and natural as it has been, it is without the artistic coarseness of the German and without the homeliness of the English.

In Belgian art Flamand and Walloon have mixed their strains; and to picturesqueness and power of art we must add another factor. It is consummate craftsmanship that must be taken as the central abiding distinction of Flemish style, whether in the twelfth-century font at Liège, in the thirteenth-century relic chest at Nivelles, in the fourteenth-century sculpture at Dijon, in the fifteenth-century tabernacle at Louvain, in the sixteenth-century tabernacle at Leau, in the stone jubes, in those wood-carved retables, or in the painted polyptych of Van Eyck at Ghent. In the sixteenth-century portraits of Matsys as the seventeenth-century masterpieces of Rubens. What a record of dexterity and capacity!

One must place the Low Countries by the side of Greece and Italy to estimate the widespread origination of other people's arts that has been found in the perfect craftsmanship of the Low Country artist. For it was on the ground of its dexterity that his style was a conquering force. All North Europe followed the lead of Flemish art.

"Can such a history," asked Professor Prior, "and such qualifications, be ended by a barbarian invasion? I trow not."

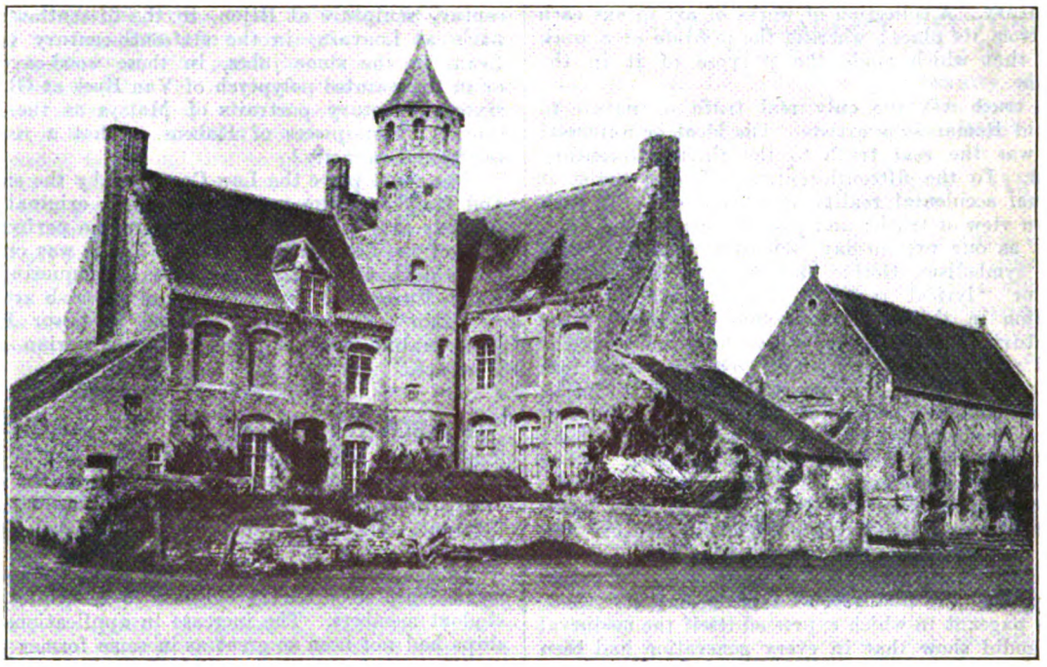
GLASGOW INSTITUTE OF ARCHITECTS.

THE annual general meeting of the Glasgow Institute of Architects was held on the 3rd inst. in the hall of the Institution of Engineers and Shipbuilders, Elmbank Crescent. Mr. John Watson, F.R.I.B.A., President, in the chair.

In the report by the Council it was stated that the membership stood at 111 Fellows, 76 Associates, 48 lay and student members. The increase in applications for Fellowships had not been so great as in some former years, owing probably to the heavy financial demands caused by the war. The Council desired to place on record its appreciation of the hearty response made by members of the Institute to the nation's call for military and naval service. Two Fellows, five Associates, and seven student members were now serving with the Navy or the Regular and Territorial Forces of the country at sea, at home, in Belgium, or in France. In view of the number of students who had gone on military duty it was agreed to postpone for a year the competition for the Alexander Thompson Memorial Studentship, which was due to be held this year, and to allow those eligible now, but unable to compete, to do so in a year. In connection with the Architects' Special War Relief Fund promoted by the Royal Institute, the Council gave a donation of £50 from the Institute's funds, and this, together with the subscriptions from individual members of the Institute, amounting in all to £92 6*s.* 3*d.*, was forwarded to the R.I.B.A. Intimation was received that a sum of £700 had been collected by the R.I.B.A. for the fund, the allocation of which was in the hands of the Architects' Benevolent Society, and it was agreed that the Society should be allowed to deal with the contribution from this Institute. A local committee had at the request of the R.I.B.A. now been formed to deal with necessitous cases in the profession.

Mr. John Watson, F.R.I.B.A., the President, in moving the adoption of the above report, said that notwithstanding the war, which had severely crippled the private practices of individual members, the work of the Institute had been actively carried on, and its aims and objects steadily maintained. The various committees had been kept busy, especially the Practice Committee, which had been called upon to co-operate with the various architectural societies in Scotland, the Faculty of Surveyors of Scotland, and the various trade societies concerned, in the preparation of national modes of measurement and conditions of contract for building work in Scotland. The mode of measurement for wright work, which had just been issued, was the first fruits of their joint labours. The meetings had latterly been held under the Chairmanship of Sir George R. Askwith, K.C. At the first glance they might not quite like the new rules, seeking as these did to eliminate "after measurement" as far as possible. They had been long accustomed to this procedure, and considered it the best in the majority of cases. On the other hand, it was undoubtedly desirable that they should have uniformity of mode throughout Scotland. Their right to demand "after measurement" where advisable would again fall to be taken up in discussing conditions of contract. In future, contracts entered into with the intention of having no after measurement would of necessity require to be more matured before being proceeded with. On all the other points under discussion, the architects had much to congratulate themselves upon the principles upon which they laid stress having been accepted. There had been fewer competitions than formerly during the past year. It was pleasing to note that the advice of members in regard to

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THE DUNES ABBEY.—BOGAERDE FARM.

conditions had usually been accepted, with a result which had proved satisfactory alike to promoters and competitors. In some cases the necessity of framing proper conditions of competition had induced promoters of small building schemes to place their work by direct commission and thus avoid competition—a procedure which had much to commend it. (Hear, hear.) It was hoped that members would loyally support the Council in their efforts in this direction. A committee had been formed to act in conjunction with the Architects' War Committee of the R.I.B.A., having as its object the providing of work for architects in necessitous circumstances. Fortunately, so far, the duties of the Local Committee had been practically nil. It was gratifying to know that within their province, architects, architects' assistants, and pupils, to the number of about sixty-seven, had responded to the nation's call for military and naval service.

The report was adopted, and office-bearers were afterwards elected.

BEHIND THE BELGIAN DUNES.

By John A. Randolph.

Hitherto the quiet little villages that abound in the Flemish plains along the coast from the Dutch frontier to the tiny corner of Belgium which that gallant little nation can still call its own have been known to comparatively few of our countrymen; but now their names are household words on our lips, and the villages have leapt into a fame that will last for all time—a fame even greater than some of them earned, for instance, in the "Battle of the Dunes" of long ago.

The greater part of the new "Battle of the Dunes" has been raging on the southern side of Ostend—an architecturally more interesting part of the plains than that to the northward, which includes the better examples of ecclesiastical architecture of the district, such as Blankenberghe, Wenduyne, Lisseweghe, Vlissighem, Nieuwmunster, Dudzeele, Knocke, Ramscapelle, and Pervyse. East of Ostend are Jabbeke, Plasschendaele, and Oudenburg. South of Ostend the architecture is also very interesting, and the light railway, or "Vicinal," passes among perhaps the best of it, the churches, however, as a rule, being plain and, in a number of cases, red brick Renaissance, but with bold, simple towers "standing four square to the winds of heaven."

Lombartzyde, the scene of so much fury, was originally a Germanic settlement of the Longobards and possessed a port of some size, which, however, was destroyed as long ago as the twelfth century by the incursion of the sea in a great storm—when the Zuyder Zee was also formed by it—when the inhabitants fled to a spot now known as Nieuport, and founded that town and made the port.

The church is attractive and contains a statue of the Madonna which the local fisherfolk have long held in veneration.

Between this village and Westende—a proverbial stone's throw away towards Ostend—the great "Battle of the Dunes" was fought in 1600, the Spaniards, under Archduke Albert, suffering defeat at the arms of the Dutch led by Maurice of Orange.

St. Georges' main attraction—from a non-military standpoint—is a fairly large country house, with one or two wings and, on the courtyard front, a bold octagonal turret, quite plain except for a square window on four of its sides, but its low pointed roof curiously crowned with a large pear-shaped slate-covered spirelet. The effect is rather grotesque, but, taken all in all, a happy touch of picturesqueness is given to the irregularly planned house. There is little else worthy of any count in this scattered hamlet. Now, of course, the "ferryman's house" of the war despatches has become as important as the "La Belle Alliance" at Waterloo. St. Georges is so near Nieuport that, notwithstanding the publishers of the picture cards of the Tour de St. Georges, it properly belongs to the Nieuport district, and not to the environs of Dixmude, as they say it does.

Near at hand is Ramscapelle which had, till early this year, a small Gothic church, of which only the roofless and windowless shell remains as a result of the German attack on it in their attempt to "hack a way through" to Calais.

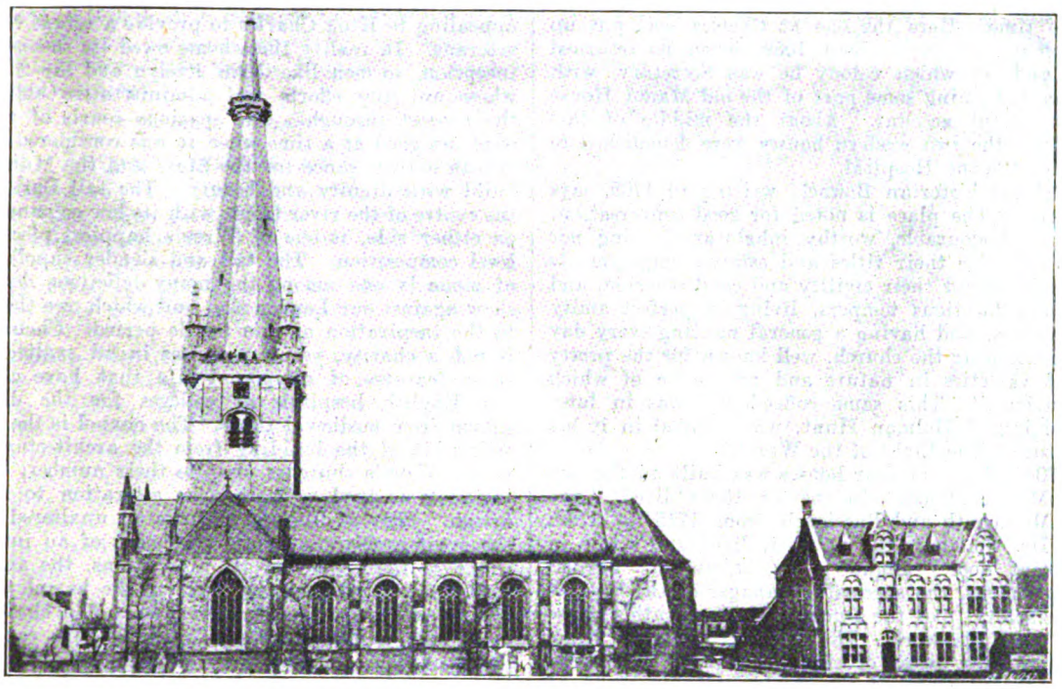
Pervyse, whose church is ruined also, lies five miles further inland.

South of Nieuport and Oostduinkerke (the rising pleasure resort and formerly a poor little village known only to a few artists) lies Coxyde, a picturesque fisher village, at the outskirts of which, towards La Panne, formerly stood one of the greatest abbeys of Flanders—the Abbaye des Dunes—founded in 1109 by St. Leger, which was destroyed in 1566 by the Iconoclasts, the monks (Cistercians) fleeing to the De Bogaerde farm (of which we give a view). Eventually they built a new abbey at Bruges—now known as the Grand Séminaire—in 1625.

Adinkerk nestles along the banks of the canal a few miles nearer France—the last village in Belgium—and its simple church has the prevailing heavy tower with octagonal equilateral roof, the whole picture being one of great charm and peacefulness.

Jabbeke, Plasschendaele, and Oudenburg do not call for very special mention, though Plasschendaele is the boldest and best of them, and Jabbeke is good. Ghistelles also, between Bruges and Ostend, has recently come into new prominence, but it is also known architecturally for its spacious brick Gothic church and lofty tower, lately sur-

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GHISTELLES.—THE CHURCH, SHOWING NEW SPIRE.

mounted by an enormous spire in bright yellow brick. It has a miraculous fountain outside the north aisle in the wall protected by an ugly iron railing, and the brief history thereof and of the Priory that was erected near is not without interest, but too long for these columns.

Between Ghistelles and Bruges, however, and close to that city, is the stone church of Varssenaere, with an octagonal stone central tower surmounted by a huge stone crocketted spire, the top of which was broken off by lightning and a small conical roof put on when repaired, with ludicrous effect. The church is small comparatively for such a steeple, but it is well worth a visit when the enemy has been driven out of the country.

CHELSEA ANTIQUITIES.

An illustrated lecture was given under the above title at Carpenters' Hall last week by Mr. Walter H. Godfrey. In his introductory remarks he said he wanted to show that the past is still living in this riverside parish, which has only lately surrendered to London and even now cherishes an individuality to which its history gives it just title.

We have been too apt, he continued, in these modern days to think a big gulf—which lies somewhere after Shakespeare and before the Great Exhibition—is fixed between to-day and the yesterday of history. We forget that the present is but an instant of time and an ever-vanishing one, too. Perhaps in the last six months we have realised that many periods of long ago are nearer to us than the years just gone. If the lesson be learnt well what a glorious revolution will come over our towns and our countryside! The shopkeeper in enlarging his premises will respect the Jacobean gable and its casement windows; the Vicar will bury his hostility towards the ancient chancel and bruised rood screen; the Town Councils will vie with one another to tend the decaying monuments within the area of their brief authority; and the speculating builder will at last perhaps feel humility and shame when he contemplates the crimes which he has committed among those smiling villages which knew naught but traditional beauty before he came.

So favoured has Chelsea been in receiving the patronage of the great and illustrious of several centuries that here a man must be a super-Philistine to escape the atmosphere of the past which everywhere pervades its walks. Much of the former beauty indeed is gone; the low river-wall guarding Chelsea's special piece of boat-littered waterside has given place to a broad and featureless embankment that effaces boundaries and joins it all unwillingly to Westminster. Many of the old quiet rows of ample dwellings have disappeared; tramways and blocks of flats have invaded what once was rural tranquillity. Yet, in spite of all, the spirit of Old Chelsea is unconquered and her votaries mount guard over the remnants of her former glory. She cannot forget she was once the Village of Palaces, and she is gradually educating her own sons to be worthy of her great traditions.

It was Sir Thomas More who may be considered to have discovered Chelsea; it was he who drew fame to her, as much by the reflection of his own greatness as by the love which he bore her as his chosen home and refuge during fourteen years. We know how he purchased a farmhouse and its quiet fields by the riverside and built himself a charming Tudor house, how he planned his walled gardens and his favourite terrace and summerhouse, how he entertained Erasmus, Holbein, and many others. The estate lay in the western portion of the parish, and the house looked immediately southwards on the length of the river now crossed by Battersea Bridge. Lindsey House represents to-day the original farmhouse purchased by More, and is the solitary survivor of Chelsea's ancient palaces. His stableyard is to-day the Moravian burial-ground, and part of the Tudor walls and buttresses are incorporated into the chapel—which has lately been converted into a studio.

The old church is curiously composite; fabric and monuments together, it represents very completely the history and life of the village. It does not pretend to be a work of art, although containing many beautiful things; it has been so intimately in touch with life itself that like life it is more an inspiration for art than an artistic product. It has altered and adapted itself to the changes of the centuries till it has become a manuscript in brick and stone. Fortunately, in 1820, when the parish had outgrown it, a new church was built, and it was saved intact, its many vicissitudes being ended. The chancel is the earliest work, and dates back to the thirteenth or early fourteenth century, the original timber roof being still preserved. The nave and west tower were rebuilt between 1667 and 1674, the latter being carried to a height of 90 ft., in a style which savours of the Commonwealth rather than of the Renaissance. For a certain picturesque charm and fitness for its riverside position the building need fear no rival. Chelsea is centred in the old church, and the old church stands for Chelsea; each reflects the other, and one cannot think of them apart.

Close by stood Church Row, once a pleasant group of houses, though now somewhat dilapidated. How many charming Church Rows there have been in the suburbs and villages around London! In the eighteenth century people did not feel that glow of pride in inhabiting a detached or semi-detached house behind cast-iron railings. It was neighbourly, and even fashionable, to live in a Row, and

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the early speculating builder pandered to the comfortable taste of the time. Here the one at Chelsea was put up by Sir Thomas Lawrence, about 1689, when he returned from Maryland, of which colony he was Secretary, with the intention of turning some part of the old Manor House property to useful account. About the middle of last century all but the two western houses were demolished to make way for Cheyne Hospital.

The delightful historian Bowack, writing in 1705, says of the village: "The place is noted for good conversation, and for many honourable, worthy inhabitants, being not more remarkable for their titles and estates, employments and abilities, than for their civility and condescension, and their kind and facetious tempers, living in perfect amity among themselves, and having a general meeting every day at a coffee-house near the church, well known for the pretty collection of varieties in nature and art, some of which are very curious." This same coffee-house was in later days the lodging of Holman Hunt, who painted in it his popular picture "The Light of the World."

About 1704 a block of four houses was built on the site of the old Manor House. In one of these lived Anne Duchess of Monmouth and Buccleuch from 1715 to 1732. From 1750 Dr. Smollett, the novelist, lived and wrote in the house next door. Eight years before his arrival Nicholas Spriemont, the successful manager of the Chelsea China manufactory, took the Duchess of Monmouth's house so as to be near his work. The celebrated factory which produced those rare pieces of china that have ministered so much to the pleasure of the world probably stood at the right-hand corner of Justice Walk and Lawrence Street. Dr. Johnson once tried his hand at the potter's craft here, but met with rather humiliating failure, which goes to show that though Raphael might write a century of sonnets, a lexicographer should beware of modelling clay. The factory came to an end in 1779, and Lawrence Street has now lost all claim to interest or beauty save for one or two of its houses.

Eastward of the old Manor House stood another of Chelsea's palaces, one of the seats for many years of the Earls of Shrewsbury. It was a fine house with a long gallery 120 feet from end to end. It was pulled down in 1813, but the site has never been wholly built over. Remains of the old buildings, with parts of a beautiful panelled room, have been found among the shops housed in its ruins, and the long Tudor walls of the garden exist to this day.

For a short time the Manor of Chelsea was in royal hands, for Henry VIII. bought it from Lord Sandes and built himself a new manor house on a site towards the eastern end of Cheyne Walk. Here the Princess Elizabeth spent a portion of her girlhood. It was part of the jointure of Queen Catherine Parr, who resided here with her fourth husband, the Lord Admiral Sir Thomas Seymour. The western portion of the Manor House in Charles II.'s reign became the palace of the Bishops of Winchester.

The Chelsea Physic Garden was originally the Botanic Garden of the Apothecaries' Company, and it still thrives, doing most useful work in spite of its envelopment by the streets and houses of Greater London. The choice of this site in Chelsea by the Apothecaries in 1673 was made for the purpose of securing a suitable home for their barge-house. In 1676 the plants of the Company's older garden at Westminster were removed to Chelsea, and benefited much from the change of air. From that time the garden became famous. It was visited by Evelyn in 1685, who marvelled at the contrivances for subterraneous heat. Here all the novelties were introduced. In 1743 Horace Walpole writes that he is going to Chelsea to obtain some seed of the tea plant, and in 1752 the seeds of mignonette were received. The Embankment has now cut it off from the river. Under its present trustees, however, it is safely preserved to Chelsea for ever, and we can imagine the shades of the old botanists still haunting it; its usefulness and its historical continuity are alike unbroken.

Some distance west of the Physic Garden stands Sir Christopher Wren's beautiful design at the Royal Hospital. From its gateway to the last detail of its internal fittings this building shows the genius of our great national architect who raised London again from its ashes. The site was formerly occupied by James I.'s Theological College. "Controversy College," as it came to be called, never prospered, and the ambitious scheme for a great Jacobean building was not even completed. The temple of wordy warfare fell eventually and gave way to a worthier building with a nobler purpose. Most have heard of the appropriate story—a mere traditional legend in all probability—of Nell Gwynn appealing to King Charles to provide a refuge for the army veterans. In reality the scheme owed its success, if not its inception, to men like John Evelyn and Sir Stephen Fox, whose untiring efforts and administrative ability carried the project through. The spacious courts of the hospital were designed at a time when it was considered a duty and not an extravagance for the State and the Municipality to build with dignity and beauty. The tall Doric portico in the centre of the river front, with its low colonnaded cloister on either side, is one of Wren's happiest pieces of quiet, level composition. The tall and slender cupola or lantern of stone is one among the many felicitous designs which show against our London sky, and which owe their existence to the inspiration of this fertile period. Chelsea Hospital is not a charity, yet it possesses in an exalted degree all those features of communal life that have characterised our English hospitals or colleges for the disabled and infirm from mediæval times. The chapel is the most interesting bit of the building from the architectural point of view. Wren's churches, despite their number, have in few instances escaped without some alteration to his original design. Here at Chelsea we have an unaltered example of the great architect's happy treatment of an interior. The shape of the room and its proportions, the apse with its finely painted domed roof meeting the barrel vault of the ceiling, all are in perfect keeping. The chapel, like the great hall which balances it, is hung with captured standards. The magnificent oak-panelled room in the Governor's house is one of Wren's finest domestic interiors. We English are slow to recognise and appreciate the men of genius which our own nation has produced; and Sir Christopher Wren's skill has never been apprised at its just value. But Wren's fame is safe while his works endure, and an afternoon spent in the beautiful precincts of Chelsea Hospital will inspire mingled feelings of pleasure and gratitude in the hearts of all those who are sensitive to the charms of noble building.

In Queen Anne's reign Lord Cheyne leased the long bowling green of the Three Tuns Inn for building. On this land rose Cheyne Row, and the southern house, which retains its old cornice and roof, bears the date 1708. There are ten houses in all, and although they have been somewhat altered outside, their panelled rooms and fine staircases are largely intact. In No. 24 lived Thomas Carlyle from 1834 to 1881.

In 1712 Sir Hans Sloane bought the Manor House and its great garden from Lord Cheyne. The purchase was a pure speculation, and Sloane at once gave over the garden to the builders. On it were erected Nos. 1 to 18 Cheyne Walk. Thirty years after his purchase Sloane occupied the Manor House itself, and brought here his wonderful collection, which he willed to remain in Chelsea. Had his wishes been respected the British Museum, which grew from its nucleus, might now be in Cheyne Walk instead of Bloomsbury. The event turned out otherwise, and after Sloane's death the Manor House was destroyed and Nos. 19 to 26 were built on its site.

Several of these eighteenth-century dwellings in Cheyne Walk have been reconstructed; but relics from them exist often where least expected. No. 4 is one of the most charming of the many Georgian houses London possesses. Here on December 3, 1880, came George Eliot, thinking to enjoy the quietness and poetry of the river prospect, but she died on the 22nd of the same month. The house is a perfect example of its type: one of the rainwater-pipe heads bears the date 1718. A larger house is No. 6, which has remained almost untouched since it was built, and containing some beautiful work in the interior. In No. 16 Rossetti lived from 1862 almost to the close of his life twenty years later. Its gate and railings exhibit, perhaps, the most beautiful specimen of wrought ironwork in London.

In Glebe Place, the London Latin quarter, amid its studios and flats, stands the little cottage once the lodge to Cheyne House. The road leads to the King's Road by a pleasing group of houses dating back to the reign of George I. Though somewhat spoiled by indiscreet additions, their mellow brickwork and wide sash windows make one feel that here is an oasis in the otherwise unrelieved monotony of the high road. In the centre house lived the composer Dr. Arne, who gave us "Rule Britannia," and it is now the home of Miss Ellen Terry.

Those that have ears to hear let them listen to what the *genius loci* in every locality has to tell them. The sympathetic visitor to Chelsea will find her places eloquent,

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and the present will seem a greater and a worthier moment when inspired by the conscious presence of the thoughts and ideals of those who have passed from us, but have left their memory behind.

OFFICIAL ARCHITECTURE AT MANCHESTER.

AT the Manchester City Council on Wednesday, the 3rd inst., Mr. Ross Clyne proposed the following resolution:

That a special committee be appointed with instructions:

1. To inquire exhaustively into the present methods adopted in connection with civic architectural matters, with a view to their possible improvement in efficiency and economy;

2. To advise the Council with regard to the advantage or otherwise of inviting the services of firms of architects in private practice, thereby enabling the city architect to devote himself to advisory and supervisory work in connection with plans, building operations, and so on; and

3. To lay its views generally before the Council.

Mr. Ross Clyne said that at a recent social meeting several members of the Council were casually discussing the question, and that one gentleman, who had to do with a department calling for much architectural work, had declared that by employing outside professional assistance the average saving would be at least 25 per cent. When some years ago the Manchester Society of Architects urged for the appointment of a city architect—the work having previously been done under the ægis of the city surveyor—the intention was for the new department to be chiefly concerned with advisory and supervisory work. What obtained in the Buildings and Improvements Department was surely itself capable of improvement; and Mr. Price, the city architect, ought to overhaul the plans and elevations as well as Mr. Moyes, the committee's surveyor. At the present time Mr. Price designs all the baths, libraries, workmen's dwellings, hospital extensions and conversions, and so on, and if he were the Lord High Architect himself—if such an official exists—it was too much to expect him to be able to accomplish, especially in view of architects who specialised in one or other of these sections. The architectural work in connection with schools was a particularly sore point. Mr. Ross Clyne believed it was in 1905 that the Education Committee passed a resolution to the effect that outside architects should be invited to compete in designs for schools. It seemed to him that official architects' duties should be to advise committees when selecting outside architects' designs. It was not fair to ask professional men to pay rates and taxes and then to rob them of their legitimate rights. They all had a high regard for Mr. Price, but to accept his uncompetitive and uncontrasted designs might not be—could not be—always economical. Nor was it fair to weigh him down with so great a responsibility. Liverpool, Leeds, and most of the Lancashire and Yorkshire towns employed outside architects; so why should Manchester act differently? It was not the first time the matter had been brought before the Council, and in 1909 an architect and ratepayer wrote that the city architect should be free to advise the committees, especially in connection with elevations fronting improved streets, and so give the city some pretensions to architecture. Then why should local architects who are ratepayers be deprived of submitting designs in competition? The speaker's opinion was that municipal buildings would be better and less costly, and furthermore, that architects and their assistants would be found work in these war days, which make the profession so quiet. Many architects would be glad to appear before the Special Committee, if the Council appointed it, and they would demonstrate the advantage which would accrue from the change. They would prove that the erections were too costly; that there was limitation of ideas; that there was a tendency to become stereotyped. In the *Manchester Guardian* of March 16, 1912, it was told how the Manchester Society of Architects sent a protest to the then Lord Mayor (Sir Walter Royce) against the Chorlton Street Schools costing £53 per head, which is far and away beyond what is considered proper. It was also told that the Education Committee only used draughtsmen working under the guidance of the late Director of Education. So how could getting the best value for the public money be expected? asked the speaker. By adopting the hoped-for change, whereby they would get better results at a lesser outlay, great advantages would accrue. In conclusion, Mr. Ross Clyne confidently appealed to the Council to pass the resolution.

Councillor Holden, chairman of the Baths Committee, seconded the proposal. His belief was that the suggested change would be beneficial in many of the ways indicated. He would be pleased to place his experience before such a committee as was advocated.

Alderman Abbott said that in Brooklyn, U.S.A., when Mr. Carnegie gave it fifteen libraries, the civic authority placed the work with architects who were each to prepare three plans and elevations. These were, on receipt, examined by a body of experts, and the five best sets selected. The result was perfect planning and beautiful and well-adapted buildings. It was not right to expect so much from one man's brain, and it was very wrong, too, when the services of the best outside architects were at the city's disposal. The result would be a great architectural advance in the civic buildings of the future. In all other matters calling for professional advice the city acted in accordance with the dictates of wisdom. A wise man had said, "Do what you like with the inside of your building. That concerns yourself. But you have no right to inflict outside ugliness upon the thousands who pass by your building every day." (Applause.)

Councillor Day said that it had been repeatedly stated that the schools of Manchester were more costly than those of any place in the country, and it would be well for the Council to let an inquiry be made, which might possibly show such suspicions not to be warranted.

Alderman Turnbull, chairman of the Education Building Department, had no hesitation in saying that in his judgment the present system was not altogether satisfactory so far as cost was concerned. Moreover, he had come to the conclusion that unless their system was changed they would never get a satisfactory housing scheme.

Councillor Todd (chairman of the Art Gallery Committee) thought the city architect must be overburdened; and getting extraneous help would clear away a lot of misunderstanding.

Councillor Johnson wondered if they would really save by making a change upon what at present obtained. If the city architect's department was abolished other architects would want their fees, which would do away with any saving. If a man went on planning a certain building he would get better every time.

Councillor Meadowcroft said, speaking as one who knew, that the Education Committee did not organise its own architectural department until after long experience. There were terrible delays in the old days in getting accounts settled up. No ordinary architect, unless familiar with the requirements of the Education Department, could do so well as the present staff.

Councillor Cook, M.S.A., denied that the Education Committee had been successful architecturally speaking, and instanced some schools which were an excrescence, uncomfortable for the children, and in direct contrast to the requirements of the Board of Education. The cost of schools in Manchester was considerably more than in Salford and the surrounding districts. He agreed with Mr. Todd that the city architect must be overworked, and with Mr. Abbott that civic buildings should be pleasing to the passer-by. As to Mr. Johnson's fear of increasing the cost, the city architect would, in his capacity as adviser, see to that. His belief was that the change would be of all-round benefit to the city.

After a little while the resolution was put to the Council and passed by a very large majority.

THE ELECTROLYTIC ACTION OF RETURN CURRENTS IN ELECTRIC TRAMWAYS ON GAS AND WATER MAINS.*

By HARRY EDWARD YERBURY, M.Inst.C.E.

THIS paper opens with reference to the systematic study which has been given to the causes of corrosion, and epitomizes the theories which have been evolved as a result of such study.

The author favours the electrolytic theory, as its effect can be demonstrated. The process is, moreover, in full accord with modern thought, based on the fact that metals have a definite solution pressure, and by the Nernst formula this and an osmotic pressure are all that is required for electromotive force and hence for corrosion.

* Abstract of a Paper read before the Institution of Civil Engineers.

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Electrolysis may be intensified by an extraneous or leakage current from, say, electric tramways worked, as they invariably are, by an uninsulated track. A case is cited where a protective clause was inserted by a gas company against possible injurious action by such leakage currents. Board of Trades Rules and Regulations and their revisions from 1894 to the present date are criticised. The influence of a leakage current on reinforced concrete is dealt with.

It is assumed that concrete conducts electrolytically and not like a metal, and cases are recorded where electrolysis has been attributed to an impurity—such as calcium sulphate—which was added to cements of American make to retard quick setting. The seriousness of the mechanical effects due to the products of corrosion is pointed out in connection with reinforced concrete structures.

The constitution or structure of metals has undoubtedly an influence on the effects of electrolytic action, and white cast iron has been proved to be less susceptible to corrosion and pitting than grey iron, as it contains less graphitic carbon and silicon. The influence of high percentages of silicon in cast and wrought iron is cited. In the subject matter of the paper the causes and results of pitting have not been specifically dealt with apart from general corrosion, and the expression "damage to pipes" is to be understood to mean both local pitting and general corrosion.

The preventive measures proposed by British and Continental authorities in order to reduce the potential differences between tramway tracks and pipes are classified, and a description of the function of a negative booster is given in detail.

Two theoretical diagrams are given to show the working and effect of a booster system as compared with unboosted negative return conductors. Where the rails and the mass of earth are positive to pipes in the vicinity of the track there can be no danger to pipes in that area, as they are cathodic.

On the other hand, danger exists to all pipes and metallic structures (where embedded in soil) which are positive to the rails, as it is the flow of current out of the pipes that has a tendency to cause corrosion and pitting. The danger, however, is nothing like as great as would appear from the theoretical standpoint.

Obviously, if the boosted and unboosted return conductors bonded to the rails are kept at or about the same potential, the ideal system as affecting leakage currents is brought about.

Assuming that the potential of the rails at some point where a negative boosted conductor is bonded is lowered to an abnormal degree, it follows that pipes carrying a leakage current are invited to give up their charge, as the difference of potential is thereby increased.

This fact is appreciated by the Board of Trade as one regulation stipulates that the direction of the current should be reversed by interposing one Leclanché cell (1.48 volt) if the current is from the pipe to the return, whereas up to 4.4 volts are allowed where the direction of the current is from the uninsulated return to any pipe in the vicinity. Results of actual potential difference and current tests on Sheffield pipes in various parts of the city are shown.

As current density and duration of current are the most important factors in connection with injurious electrolytic action of or on gas or water pipes, potential readings are somewhat misleading, as it is now well known that where a comparatively high difference of potential exists there is as a rule less injurious current passing. This is largely attributable to the counter electromotive force of polarisation. In Sheffield when the tramway system and generating station have been shut down differences of potential up to 0.66 volt have been observed on pipes.

Board of Trade regulations in respect of leakage currents can easily be complied with on all tramway undertakings and are absolutely effective in safeguarding the property of other authorities. As 650 volts are allowed as a generating or transforming pressure, in the author's opinion up to 600 volts could be allowed between overhead conductors and earth, as 10 per cent. is often the maximum drop on a tramway system.

This increase of voltage would reduce the cost of feeders and also the heavy currents now dealt with.

Electrical disturbances, apart from return currents, are mentioned, such as electromagnetic and electrostatic induction.

Single phase alternating current railways are especially troublesome. Telephone circuit interference is chiefly due to harmonics of such a frequency as to come within the range to which the ear is sensitive.

Voltage waves from generators and transformers are usually distorted and do not vary uniformly according to the sine law. Star-connected alternators with earthed neutral point frequently cause disturbances in neighbouring telegraph and telephone systems, due to the presence of triple-frequency harmonics in the pressure wave.

The interference with telegraphs and telephones is not entirely confined to alternating current systems, and trouble has been experienced by pulsating direct current set up by the generators or rotary converters. Special study of each individual case is required before a remedy can be applied. It is desirable, however, that in continuous circuit generation and distribution the generators should produce a current without appreciable pulsation, and for alternating work generators having a pure sine wave should be used.

The influence of magnetic fields near tramway tracks has not been considered in the paper, as such disturbances only appreciably affect magnetic observatories.

The paper concludes with a summary, and a theory is put forward that incrustation in the bore of pipes is often caused by local electrolytic action. This growth might be started as a speck of rust, thus forming with the iron a galvanic couple, the oxide being electronegative to iron. The electrolyte might be created by the secretions of animalculæ or other acids. This nucleus would then establish a closed circuit, and the growth would continue by the increased bulk of oxide acting as a shell to retain the electrolyte.

Iron pipes should be subjected at a proper temperature to a dipping in some bitumastic solution so as to form a tough adherent covering. This appears to be the best preventive against internal and external corrosion or pitting.

The author suggests that a field of research is open to metallurgists to determine whether corrosion of wrought iron and steel is due to local electrolytic couples set up by some internal crystalline arrangement or to thermal or mechanical stresses in manufacture.

It appears that cold worked metal is generally anodic and can be changed to a cathodic condition by annealing. When cold worked and unworked metal are in contact the possibility of an electrolytic couple exists.

Alternating stress steel is also a potential cause of corrosion.

Metallic connections to the rails, such as bonds from tramway poles and feeder pillars, should be as few as possible, and all pipes should be kept at least 2 feet from the track.

All rail joints should be tested periodically. Where joints are welded, a copper bond is recommended as a precautionary measure in case of a high resistance being set up by a badly welded joint, which resistance in course of time would be intensified by additional oxidation.

SEVENTEENTH-CENTURY READING.

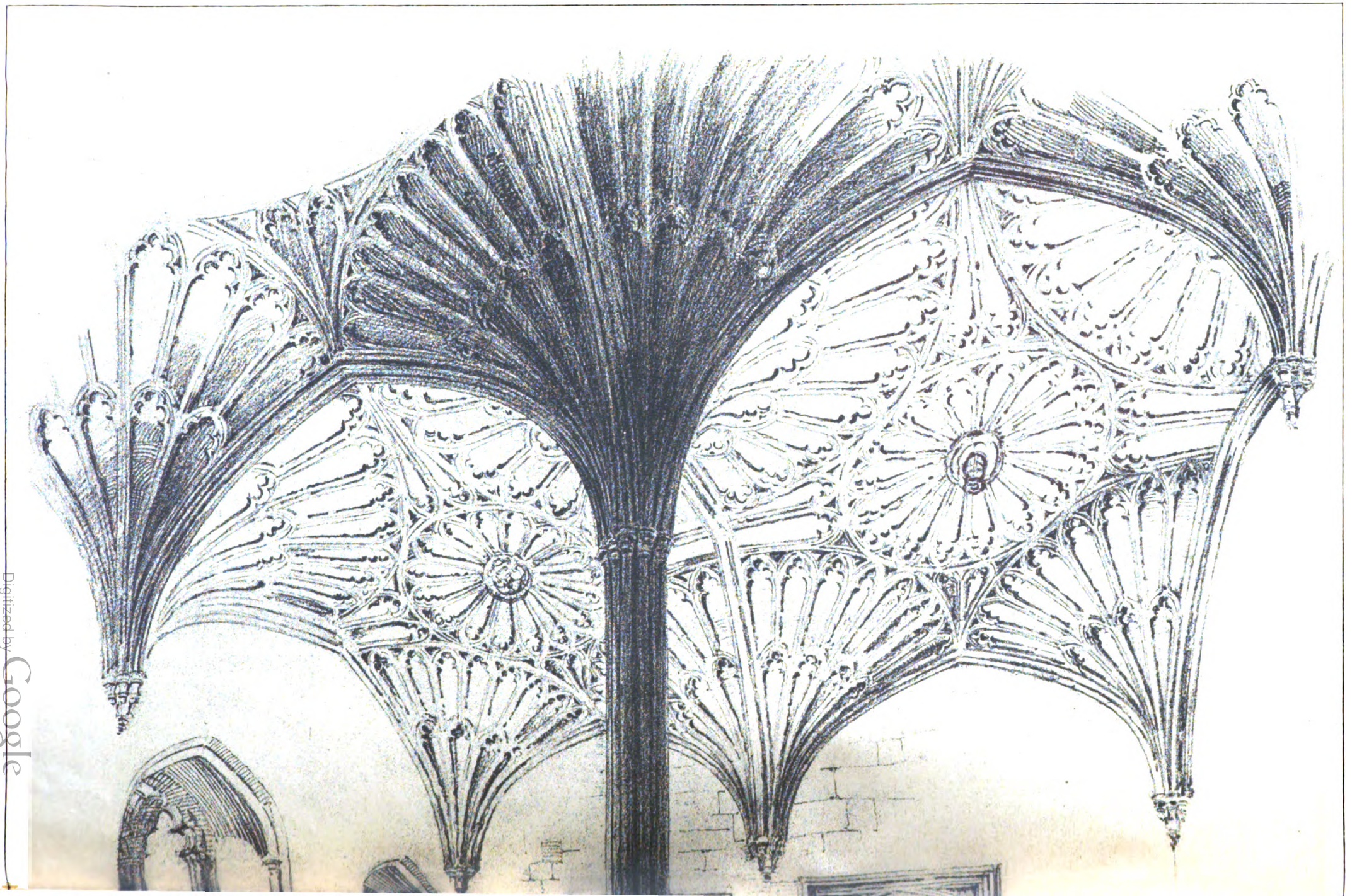
IN the December issue of the *Reading University College Review* there appears an interesting article by the Principal of the College, entitled "Notes on the Town of Reading in the Seventeenth Century." It is divided into two parts; the first deals with the Town and the other with the Free School. From the former we take the following extracts:—

The population of Reading during this period was about 5,000. Most of the inhabitants dwelt within an area defined by Old Street, Friar Street, the Market Place, and the Hallowed Brook. London Street, however, was well lined with houses. The Friary marked the limit of the town on the north-west; the Abbey on the north-east. There were three parishes and three churches. Barges plied on the Kennet to and from the wharf by High Bridge. The western road which skirted the town on the south was growing in importance, but the road over Caversham Bridge was still the highway to Oxford, and perhaps still the chief route of traffic. Camden wrote that Reading "for the neatness of its streets, the fineness of its buildings, for its riches, and the reputation it hath gotten for making of cloth, goes beyond all the other towns of this county." It was certainly the leading town in Berkshire. In 1636 Reading was assessed for ship-money at £220, whereas Newbury was assessed at £120. Windsor and Abingdon at £100, and Wallingford at £20. Pepys, who visited Reading in 1668, speaks of the town as "a very great one, I think bigger than Salisbury."

The Kennet threaded the town with many streams. The charter granted to Reading in 1562 by Elizabeth speaks of nineteen bridges. There were six bridges between the Friary and Caversham Bridge, and seven in one short street which

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STAIRCASE, CHRIST CHURCH COLLEGE. OXFORD.

C. S. CARTER 1914.

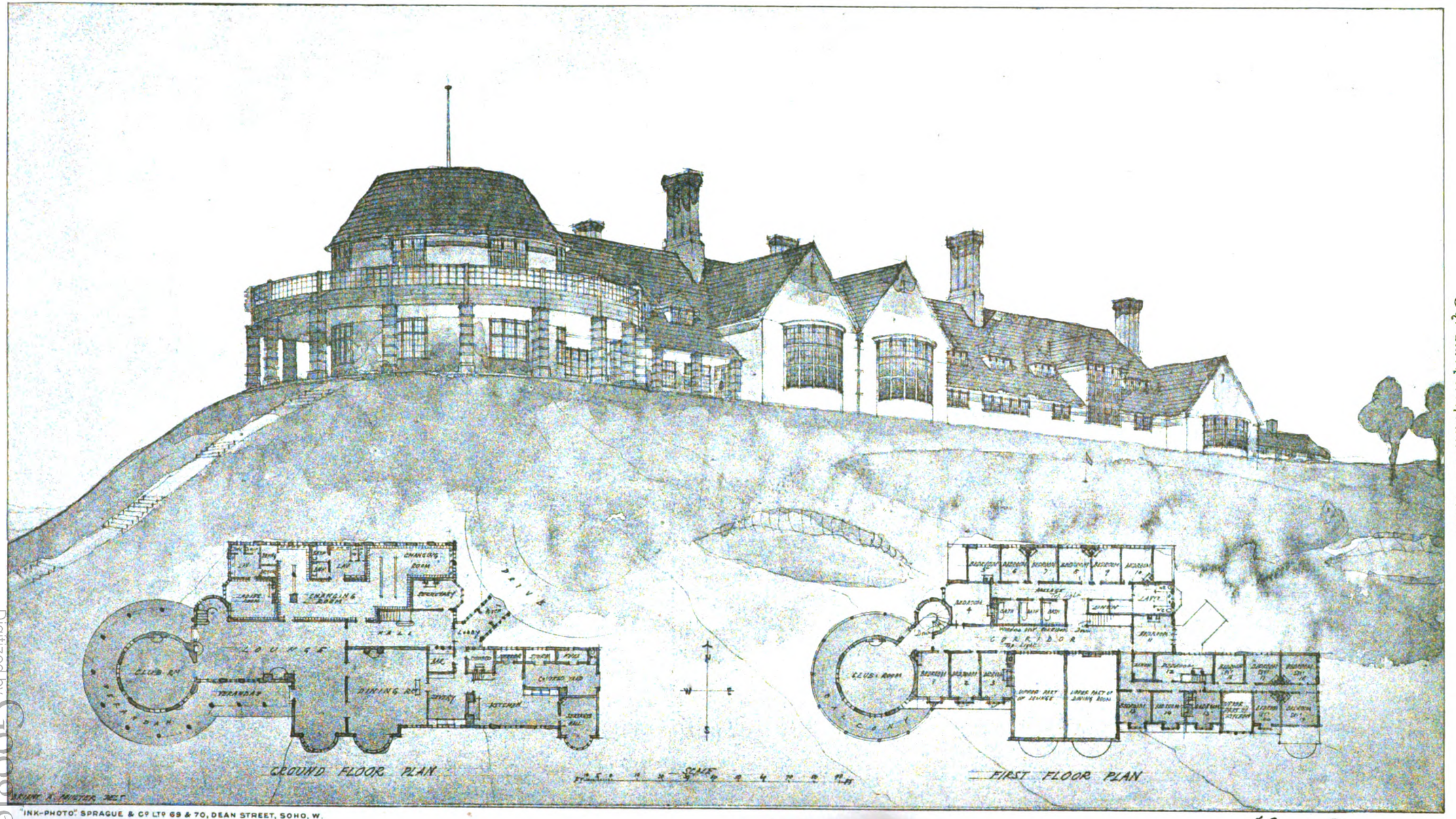
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TRAVELLING STUDENTSHIP, 1914.

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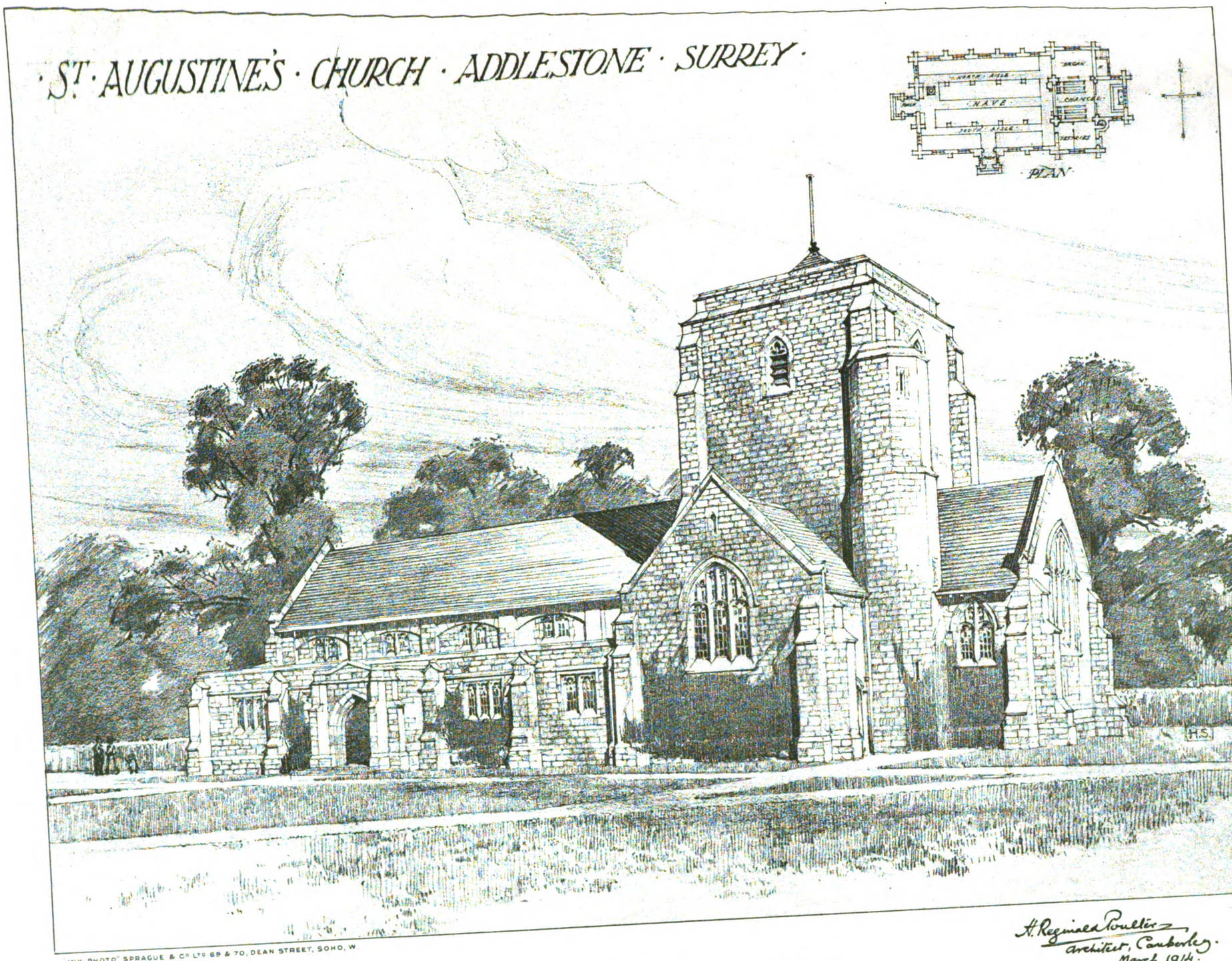
CAMBERLEY HEATH GOLF CLUB.

H. Reginald Poulter
Architect, Camberley
Oct. 1912.

(Royal Academy Exhibition, 1914.)

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· ST · AUGUSTINE'S · CHURCH · ADDLESTONE · SURREY ·



INK-PHOTO" SPRAGUE & Co Ltd 69 & 70, DEAN STREET, SOHO, W.

· VIEW · FROM · SOUTH · EAST ·

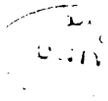
H. Reginald Poulter
architect, Camberley.
March 1914.

(Royal Academy Exhibition, 1914.)

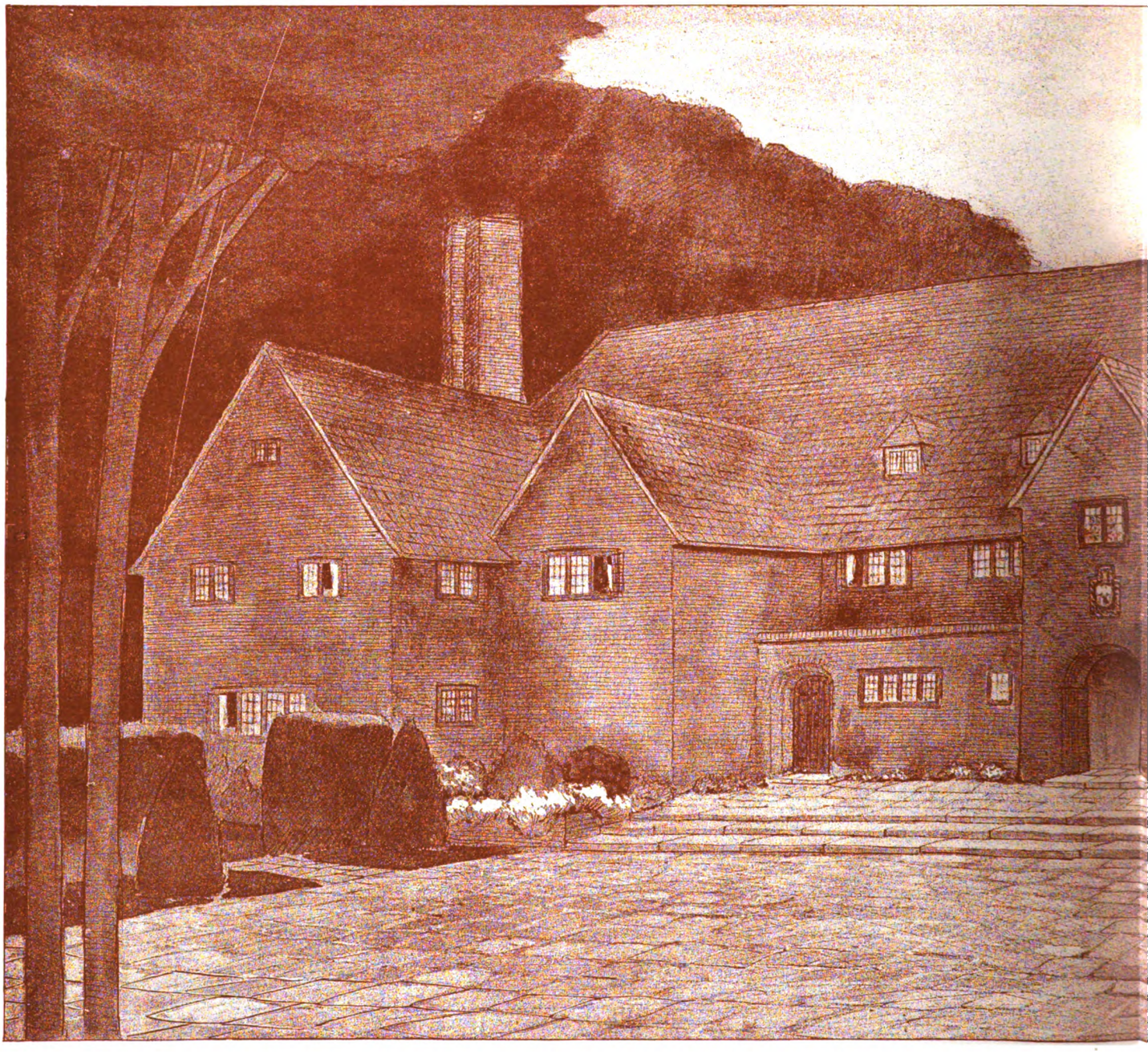
The Architect, Mar. 12th 1915.

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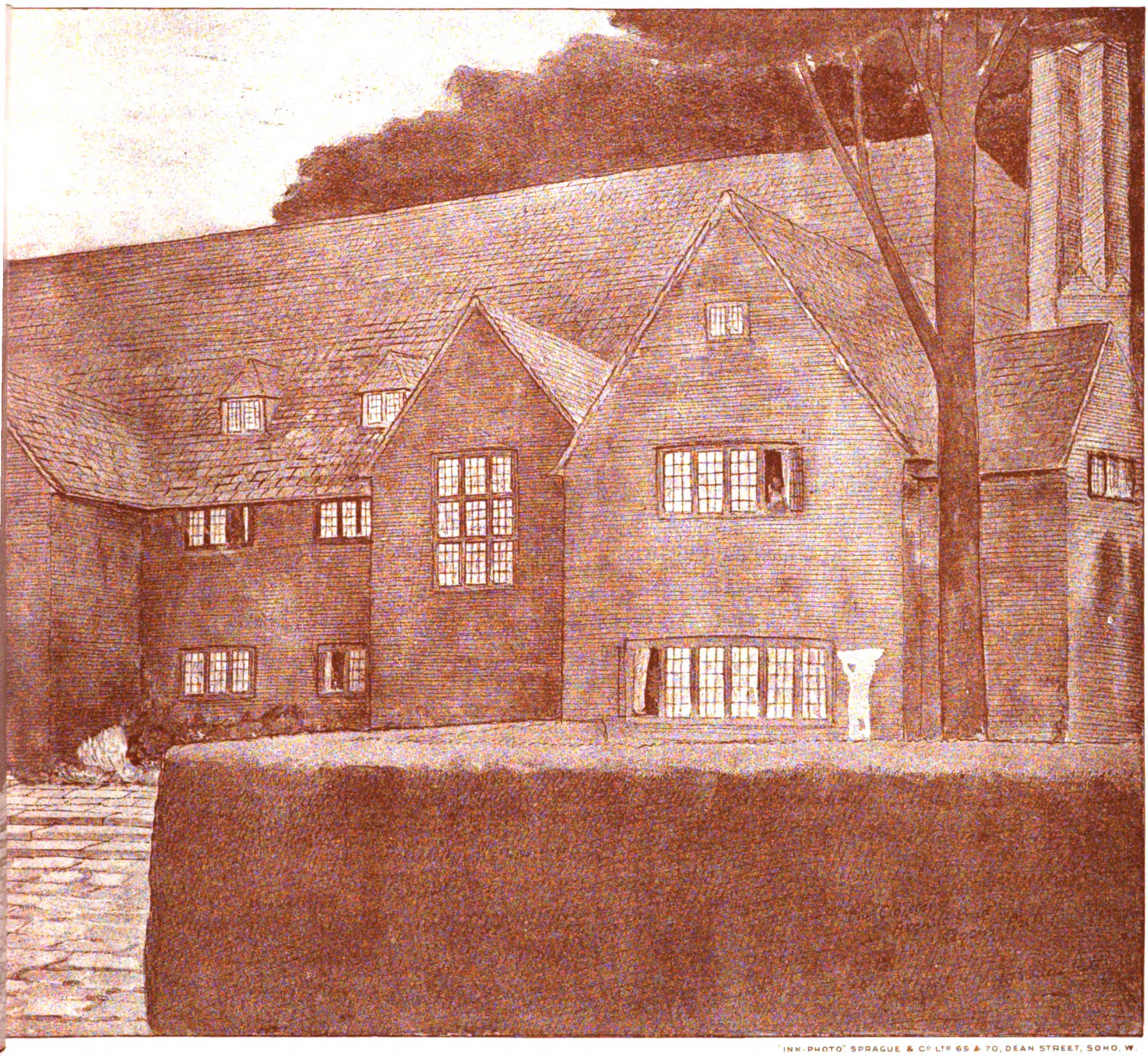
HOUSE AT REGENT'S

Mr. M. H. BAILLIE S

(Royal Academy Exhibition, 1914.)

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Mar: 12th 1915.



"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

'S PARK, LONDON.

SCOTT, Architect.

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derived its name from the fact. Caversham Bridge, maintained in part by Reading, was an ancient structure in wood and stone. Half-way across it were the remains of the Chapel of the Holy Ghost.

The little town was invested by green fields. Within its boundary were two farms, several barns, and many orchards and gardens. Travellers praised the amenities of its situation. Yet the streets and "rows" were narrow and tortuous, paved with flints and pebbles, and darkened by projecting stories and swinging signs. Fines failed to check encroaching ovens, windows and porches. In the middle of each street was a foul gutter, the haunt of roaming "hogges." Once a week a scavenger cleansed the Market Place and its vicinity. Twopence a week could compound for the offence of an "annoyaunte gutter"; and a small fine atone for fouling a water supply. Drainage is never mentioned. "Mastive dogges" lurked in doorways, and bit the unwary. By night "lanthorne and candlelight," according to the by-law, glimmered from door to door. At nine in the evening and at five in the morning "Great Harry" tolled from the belfry of St. Lawrence.

A few details will fill in the picture. The wall of the Abbey enclosure yet stood, and so also (in 1610) did the great church with tower and spire springing from the intersection of nave and transepts. The great hall was not yet unroofed. Within the precincts Sir Francis Knollys, six times Member of Parliament for the borough, had his "Abbye House." Close to "the greate gate into the Forberye" were gardens, whence boys stole flowers on Sunday, and sold them "for halfe penne a peice." Enough of the "Priory House" yet remained in 1614 to make it a meet lodging for the Queen of James I., and here dwelt successively John Saunders and Tanfield Vachell, both of whom represented Reading in Parliament. The Guest Hall of the Hospital of St. John the Baptist, barbarously sliced in two horizontally, served above for a town hall, and below for a schoolroom. Hard by were a garden and bowling alley; cattle pastured in the churchyard of St. Lawrence. The old Dormitory of the Hospital was used as a royal stable. In 1611 John Blagrave, of mathematical note, left £200 to enlarge the Market Place by demolishing the "middle row of houses between the Pump and the Cage." With other money, left by him for the purpose, was completed in 1619 "a very faire walk, under the south side of St. Lawrence's Church, ten foot broad at the least and in length from the Church porch to the west end of the belfrey." This Walk, or Piazza, was intended as a shelter for market-folk; it was lined with wainscot, and there were "benches high enoughe for tall men to sitt with backes of good boardes . . . done according to good meaninge." Here was held the oatmeal market. Close by, projecting from the south wall of the church, stood the Knollys aisle, built in 1636 by Sir Francis Knollys, on void ground ceded by the Corporation, "for the peculiar use of himselfe and his posteritie, as well for their seates there as for their burial place underneath." Opposite the Knollys aisle and close to the Compter Gate stood the Compter Prison. In the midst of the Market Place stood "the Plumpe" and Well, leased by the Corporation for fourpence a year.

Sun Lane and Back Lane, divided by a row of houses, covered the ground occupied by the modern King Street. The east end of what is now Broad Street was then also divided by a row of houses into Butcher Row and Fisher Row. The ground "at the end of the Broade Streete, neere the Butchers' Rowe," was called Browne's Hill, "a place of recreation to walk in." From here, in 1633, the shambles, whereby "the beauty and pleasure of that street is utterly lost," were removed by royal order.

The ground opposite the George Inn gatehouse was called Tothill, and hard by was the Drapery or Cloth Market. In or near Fisher Row was the Wool Hall. The sheep-market and hog-pens were on the south side of the west portion of Broad Street. Between the sheep-market and "Cheyne Lane" was the house of Sir Edward Clerke, Steward to the Corporation for many years. The bend in the road by the Friary was known as "Towne End" or "Fryers' Corner." Minster Street, during this period, was so narrow and so often blocked by wagons that in 1648 the Corporation closed it with chains. There were two sets of archery butts; one, by St. Mary's Church, maintained by the parishes of St. Mary and St. Lawrence; the other, maintained by the parish of St. Giles, "near the highway side." In Crown Lane was the house and garden known as "the Sanctuary." In the Conduit Close on Whitley Hill were the "boarded houses," built and maintained at the public expense for the plague-stricken.

The town was full of inns. The chief were the "George" and the "Bear." The King's Justices used to dine at the "George," and on one occasion were disturbed by "dog-fightings and other brabbles" in its gatehouse. At the "Bear" the "Lord General Cromwell" received gifts from the Corporation. Other inn-names of the period are the "Crown," the "Sun," the "Half Moon," the "Cardinal's Hat," the "White Hart," the "Cavalier," the "Catherine Wheel," the "Three Tuns," the "Black Swan," and "The Ship." Pepys, in 1668, noted the "Broad Face" as being an "odd sign."

Outside the churches, the life of the town expressed itself chiefly in the Market Place. Members of the Corporation in "gownes furred with foynes or martens" passed through it on their way to "Hall." On Saturdays the Market Place was thronged with country folk; corn was pitched on the stones; carts and wains were backed against the houses, and the market was "full" about eleven o'clock. Curious figures, intent on business, lawful or otherwise, mingled in the crowd; the stranger "lycensed to practise chirurgerye" seeking "to shew his quality," but confounded by abuse and blows; "the black, shag-haired and spare fellowe" caught cutting a purse from a woman's girdle; the footpad with false passport and unconvincing tale of a journey "to London to pursue a Turke about cutting out his tongue"; the town sergeants in "new clokes," about to cry a proclamation; servants of the Warden of the Fleet Prison, watching sentence done in the pillory on a victim of the Star Chamber; a company of players holding the licence of the Master of the Revels, and "servants of her Highness the Lady Elizabeth" turned away from the Town Hall and told "to forbear"; boys of the Free School watching cudgel-players, and a crowd which called the constable "coxcom," tried to "stare him out," and thrust at him with the "hiltes of the cudgills"; Vincent Lancellus, "Arrabian by nation and Doctour of Fisicke," permitted to practise in Reading under licence of the Archbishop of Canterbury; a wild-eyed group discussing the last story of witchcraft; Robert Hatt "of the Burmoodes 'alias' the Sommer Ilandes," on his way to the Town Hall to ask for "some poore children, havinge £5 or £6 a piece, to paye their passage and to apparell them," whom he will surely bring to prosperous estate; constables flogging a wife-deserter tied to the tail of a moving cart; sailors from the western ports; "stronge and able men fitt for the warres," billeted on the town; fugitives from justice; Dutchmen; "poore travellers and Irishe"; workmen without work; thieves and honest folk.

GERMAN VANDALISM.

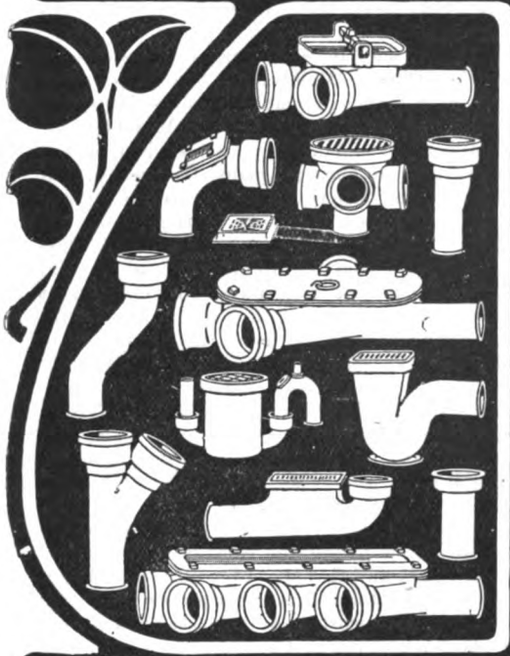
PROFESSOR BALDWIN BROWN gave a lecture recently under the auspices of the Edinburgh Architectural Association, in the College of Art, in aid of the Belgian Relief Fund. The subject, "French and Belgian Monuments and the War," was one of topical interest, and there was a large attendance of ladies and gentlemen. Mr. T. Forbes MacLennan, A.R.I.B.A., occupied the chair, and mentioned that the Association had given £46 to the Architects' War Fund.

The lecturer explained that the practical object in view was to secure some substantial aid for the Belgian people as a recognition of the obligations towards them of the Allied Powers. History recorded, he said, no example of a less deserved or a more grievous injury than that inflicted on Belgium by her despoilers. The acknowledged wrong of the violation of her territory had been followed by the seizure of the country, and by acts of violence and rapine that had aroused the resentment of the whole civilised world. It was not, however, only on account of their unmerited sufferings, but as an acknowledgment of their spirit and gallantry, that the Belgians had a claim on the public sympathy. In the successful defence of Liège, in the evacuation of Antwerp by the Belgian field army, and its prowess in the long-drawn-out battle by the dunes, there was a triumphant refutation of the smug official doctrine of the German military party that a people could not fight unless it were always busy on warlike preparations and practice, and of Bismarck's prophecy that a people would always sue for peace if treated with sufficient cruelty. There remained also the direct military obligation under which the Allies lay to Belgium through her spirited opposition to the German advance. Possibly even the ultimate result of the war, and certainly its duration, had been largely affected by the delay to that advance during the all-important early days in August.

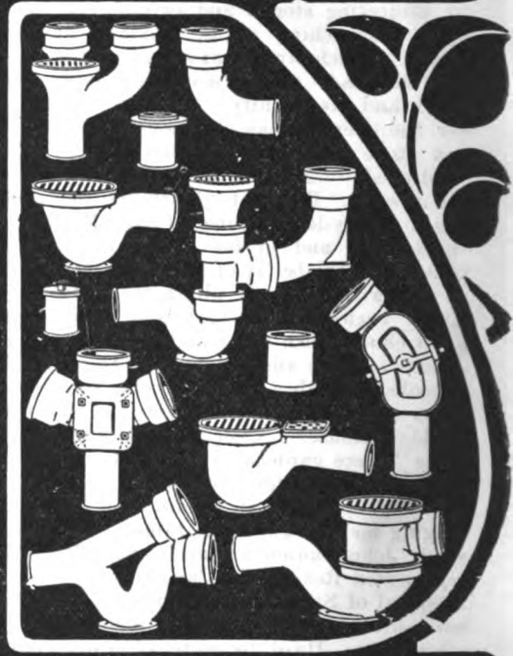
In regard to the effect of the war on the architectural

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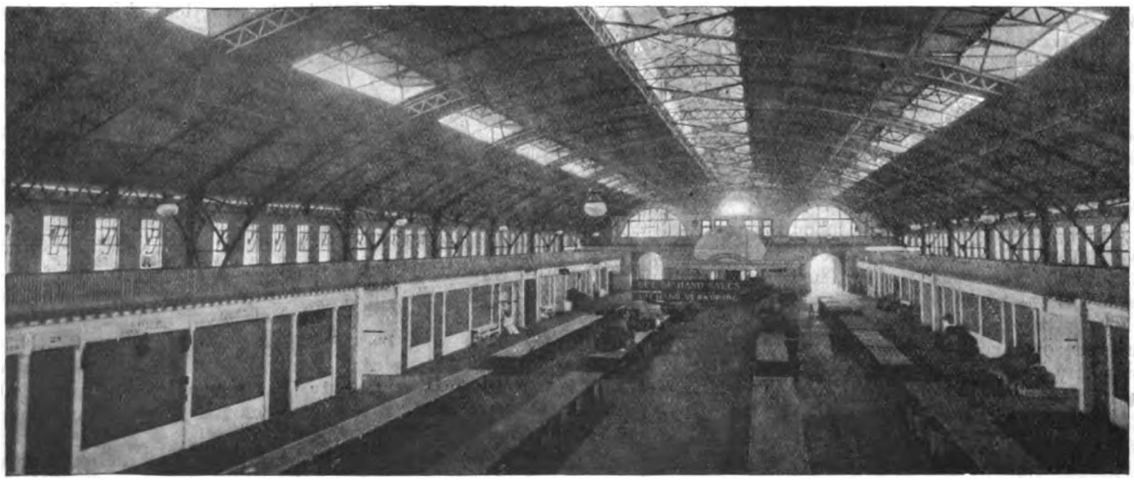


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monuments within its area, there was the necessary destruction caused by military operations largely of the nature of long-drawn-out artillery duels, and these might account in more or less innocent fashion for the ruin, total or partial, of the unique mediæval Cloth Hall and adjacent structures at Ypres. There was also deliberate destruction from political motives, and there was destruction through rancour. Those two motives might account between them for most of the desolation wrought among the buildings of Belgium. About Louvain there was no shadow of doubt that the destruction of the University, and especially of the world-famous library, was a deliberate act. He had been assured on unimpeachable Dutch testimony that the library had been drenched with petroleum and benzine, and then set on fire. The ancient fame of the University, in the sixteenth century the best in Europe, overshadowed that of the universities of Germany, and it had to perish! The case of Reims might be doubtful, as the plea had been urged that the towers were used for military purposes as posts of observation. The recent German claim that only two shots had been fired at it was, however, preposterous, and they had the reasoned report on the building of the American architect, Mr. Whitney Warren, as well as photographs of the destruction, some of which would be shown.

The effects of war on the monuments could be seen in the views illustrating the lecture, many of which gave photographs of a building, or part of one, both before and after the bombardments. The main object in showing these views, however, was an artistic one, and they were intended to give an idea of the value to civilisation of the monuments that had been violated, and were still in imminent peril. There were two classes of these—the trade and town halls of the Belgian cities, and the cathedrals and greater churches of France, of which, at least in the area of fighting, the Cathedral of Reims was by far the most important. The trade hall and the town hall were quite different, and should not be confused; and there was a third civic structure, sometimes independent, sometimes connected with one of the others, the watch tower or "beffroi," which we called "belfry," though the word had nothing to do with "bell." There should also be mentioned as semi-public structures the guild houses, or meeting-places of the members of the different crafts or trades, which, with their picturesquely varied gables, formed such characteristic features of the open spaces and streets of the Belgian cities. The trade hall, or "Halle," as it should be called, was a structure for use, consisting in a large space covered with a low roof, and with open arcades all round it, employed for purposes of market traffic; and above this were ranges of apartments used for the meetings of trade guilds. Only in cases where the watch tower was built in connection with such an edifice would it possess much architectural character. The earliest of these Halles dated from the thirteenth century, and Ypres and Bruges held the precedence in point of time, the former being also by far the finest extant specimen.

The town hall was a rather later institution, and dated in Belgium generally from the fifteenth century. It was deliberately designed for an ideal purpose, the glorification of the civic ideal, and was the expression of the self-consciousness of the community in its wealth, independence, and culture. It was curious to note that for a public structure of the kind there was at the time no model or traditional form, and the fashion of them was borrowed from the churches, giving to some of them a curiously ecclesiastical look, sometimes secured by running the niche of a tall, pointed window up through two or three storeys. The contrast of the church-like Hôtel de Ville at Bruges with the plain, unpretending structure of the Halles, almost overpowered by the imposing belfry tower, was very marked. The mediæval town hall had been singled out by William Morris as the typical work of art *par excellence*, because of its communial character as the joint work of all classes of the people, wherein had collaborated millions upon millions of strokes of the craftsman's tools, in each of which had been active intelligence to further the general design of the master workman. The same might be said of the Gothic cathedrals of the French towns of the twelfth and thirteenth centuries, which were not only religious buildings, but national monuments, to which all sections of the populace brought their labour, or at any rate their devotion. The magnificent Gothic church as a whole was an embodiment of the ideas and the activities of the great twelfth century, which began the development of modern Europe. The structure, almost doctrinaire in its logical consistency, reminded one of the scholastic philosophy, a creation of the twelfth century, that had its home in the University of Paris, while the decoration, and more especially the beautiful figure sculpture, incorporated the moral ideas and the tendencies in the conduct of life of the age which was personified in the gracious and chivalrous figure of Saint Louis of France. Numerous illustrations were shown of the decorative sculpture at Reims, especially that on the upper portions of the building not so accessible as the well-known figures on the portals, and it was pointed out that the expression of the statues, which varied from the solemn dignity of a monumental figure of Christ or of a patriarch to the graceful sprightliness of some of the later angel forms; the humanity and tenderness that breathed from them; the ideal beauty that was combined in them with so much that was natural and free, made them a perfect expression of the age of romantic devotion that found an outcome in chivalry and the Crusades. The spirit of Gothic art was at the exact antipodes to the temper of brutal self-assertion, of oppression and violence, of cynical contempt for good faith, and for all the charities that make human life worth living, that made up the dominant Germanism of to-day. The poet Heine, who discerned the sinister elements in the national character of his people, prophesied as a culmination of their offences against civilisation that they would some day come and demolish the Gothic cathedrals!

ART IN LONDON.

ROYAL SOCIETY OF PAINTER-ETCHERS AND ENGRAVERS.

THE thirty-third annual exhibition of this Society, if smaller in extent than on some previous occasions, is perhaps not the worse on that account, for we will choose to assume that an increase in the number of exhibits would not have added to the quality of the Show.

We do not say that this assumption is warranted, but let this pass, whilst we give consideration to the studies suspended from the walls of No. 5A Pall Mall East.

Sir Charles Holroyd is not to be congratulated upon his exhibits. The one least open to adverse criticism is the book-plate (No. 2), which shows a free touch; but freedom need not connote rusticity, and whilst we perceive a sense of composition, yet we cannot but deprecate for a lady's book-plate a figure where not even a loin-cloth is provided. This is not prudery upon our part, but an expression of a view that the design shows a lack of convention which is to be deplored. "S. Gerimia, Venice" (No. 47), is a sketch such as an Ablett student of the tenderest years would contemn, and "The Drum" is both out of drawing and lacks the sense of values; whilst "Tivoli" is too hard and too much in one plane. Mr. Robert Spence has an interesting sole exhibit in "George Fox and the Rime-maker," where the slight animadvertive criticism which occurs to us may well be suppressed in view of the general good level of the work. Mr. J. P. Heseltine's "La Frette" is commendable for its breadth of treatment. Amongst Mr. Alfred Bentley's dry points we will refer to "Dinan" (No. 36) and "A French Priest" for their forcefulness and general excellence.

Mr. Herbert Dicksee shines in animal limning, of which "Study of a Lion" is a very good specimen. Mr. Percival Gaskell's mezzotints "Dawn" and "Gasternthal" are some of the best works on exhibition, and this may also be predicated of his aquatint, "The Heron's Pool"; "Riva degli Schiavoni," too, is delightful with its expression of distance. Mr. Axel Haig is far more pleasing in interiors than exteriors; "Ely Cathedral" is a *chef d'œuvre manqué*, the limitation being mainly the result of an absence of the quality of mystery.

Mr. C. O. Murray is to the fore with good work in "Stirling Castle," "Chateau Josselin," and "Dinan"; there is herein no straining after effect, the latter being obtained quite legitimately. Mr. Osborne's "Heart of Scotland" is bright and light. Mr. Wyllie has a novel contribution in the shape of an illustrated poem "Our Fathers," and highly effective it is, though we incline to the view that the text is overloaded with illustration.

Some melancholy interest attaches to half a dozen of the exhibits, the production of recently deceased members. Of these we would mention Mr. Urwick's "Snowdon" and the book-plates by Mr. G. W. Eve, which latter show a masterly grasp of this species of design and technique.

There is but little more for which we can allot space

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Prudential Assurance Company, Ltd.

Chief Office: HOLBORN BARS, LONDON.

Summary of the Report presented at the Sixty-sixth Annual Meeting, held on 4th March, 1915.

ORDINARY BRANCH.—The number of policies issued during the year was 65,751, assuring the sum of £6,318,843, and producing a new annual premium income of £424,353. The premiums received during the year were £5,035,625, being an increase of £115,107 over the year 1913. In addition, £10,315 was received in premiums under the Sickness Insurance Tables. The claims of the year amounted to £4,014,658. The number of deaths was 9,351. The number of endowment assurances matured was 24,966, the premium income of which was £136,735.

The number of policies in force at the end of the year was 922,505.

INDUSTRIAL BRANCH.—The premiums received during the year were £8,176,202, being an increase of £301,746. The claims of the year amounted to £3,373,850, including £398,360 bonus additions. The number of claims and surrenders, including 6,731 endowment assurances matured, was 392,883. The number of free policies granted during the year to those policyholders of five years' standing and upwards who desired to discontinue their payments, was 103,514, the number in force being 1,947,556. The number of free policies which became claims during the year was 46,364.

The total number of policies in force in this Branch at the end of the year was 20,085,010; their average duration exceeds thirteen years.

The assets of the Company, in both branches, as shown in the balance sheet, are £91,202,344, being an increase of £4,209,341 over those of 1913.

The outbreak of hostilities in August last placed upon the Directors the grave responsibility of deciding what charge, if any, should be made to policyholders on active service. After careful consideration it was decided to charge no extra premium in respect of existing policies on the lives of those engaging for the period of the war, and in respect of existing policies on the lives of other members of the regular forces it was decided that £250 of assurance on any life should be exempted from the payment of extra premium.

In the Ordinary Branch a reversionary bonus at the rate of £1 10s. per cent. on the original sums assured has been added to all classes of participating policies issued since the year 1876.

In the Industrial Branch a bonus addition will be made to the sums assured on policies of over five years' duration which become claims either by death or maturity of endowment from the 5th of March, 1915, to the 2nd of March, 1916, both dates inclusive, as follows:—

PREMIUMS PAID FOR	BONUS ADDITION TO SUMS ASSURED.
5 years and less than 10 years ...	£2 10s. per cent.
10 " " " " 15 " ...	£5 "
15 " " " " 20 " ...	£5 "
20 " " " " 25 " ...	£7 10s. "
25 " " " " 30 " ...	£10 "
30 " " " " 35 " ...	£12 10s. "
35 " " " " 40 " ...	£15 "
40 " " " " 45 " ...	£20 "
45 " " " " 50 " ...	£30 "
50 " " " " 55 " ...	£40 "
55 " " " " 60 " ...	£50 "
60 " and upwards ...	£60 "

The six Prudential Approved Societies formed under the National Insurance Act 1911 have done important work during the year and the membership continues to increase. Since the commencement of the Act the Agency Staff has distributed benefits exceeding £3,000,000 to the members at their own homes.

Balance Sheet of the Prudential Assurance Company, Limited, being the Summary of both Branches, on the 31st December, 1914.

LIABILITIES.	£	s.	d.
Shareholders' capital	1,000,000	0	0
Life assurance fund—			
Ordinary Branch £47,024,190 5 8			
Sickness insurance fund ... 13,562 8 9			
Life assurance fund—			
Indust ial Branch 40,649,318 9 8			
	87,687,071	4	1
Investments reserve funds	1,750,000	0	0
Courts (Emergency Powers) Act Reserve	300,000	0	0
Claims under life policies intimated and in course of payment	233,518	0	7
Annuities due and unpaid	3,171	13	4
Balance of bonus under life policies reserved for distribution	228,582	15	10
	£91,202,343	13	10

ASSETS.	£	s.	d.
Mortgages on property within the United Kingdom ...	8,882,496	5	4
Mortgages on property out of the United Kingdom ...	336,449	2	9
Loans on parochial and other public rates	13,412,347	14	8
Loans on Life interests	1,193,287	0	11
Loans on Reversions	96,502	18	3
Loans on stocks and shares	76,385	2	0
Loans on Company's policies within their surrender values	3,221,385	7	9
Loans on Personal security	*Nil*		
Loans to Educational institutions secured on income, etc....	43,969	19	1
Investments:—			
Deposit with the High Court (£24,400 2½ % Consolidated stock)	17,568	0	0
Carried forward ...	£27,280,391	10	9

ASSETS—*continued.*	£	s.	d
Brought forward ...	27,280,391	10	9
Investments (*continued*):—			
British Government securities	1,413,368	1	5
Bank of England stock	143,117	2	10
Municipal and county securities, United Kingdom	1,682,752	10	7
Indian and Colonial Government securities ...	4,621,551	12	10
Colonial provincial securities	1,371,547	15	11
Indian and Colonial municipal securities ...	3,577,816	8	5
Foreign Government securities	5,411,862	18	11
Foreign provincial securities	789,465	10	11
Foreign municipal securities	4,115,813	0	6
Railway and other debentures and debenture stocks and gold and sterling bonds—Home and Foreign	21,247,943	14	5
Railway and other preference and guaranteed stocks and shares	3,193,674	17	2
Railway and other ordinary stocks and shares ...	2,865,148	2	6
Rent charges	605,472	4	2
Freehold ground rents and Scotch feu duties ...	4,766,452	6	6
Leasehold ground rents	9,143	11	7
House property	4,200,467	19	11
Life interests	34,626	14	6
Reversions	1,338,434	10	7
Agents' balances	6,647	16	0
Outstanding premiums	627,723	11	8
Outstanding interest and rents...	115,010	13	4
Interest, dividends and rents accrued but not payable	522,743	1	0
Bills receivable	*Nil*		
Cash—On deposit	20,000	0	0
In hand and on current accounts	1,241,167	17	5
	£91,202,343	13	10

The values of the Stock Exchange securities are determined, under the regulations of the Company, by the Directors. These values have been compared with the middle market prices on 31st December, 1913, subsequent purchases being taken at cost price, due allowance being made for accrued interest, and the difference is more than provided for by the Investments Reserve Funds.

We certify that in our belief the Assets set forth in the Balance Sheet (compared with standards available at the date indicated) are in the aggregate fully of the value stated therein less the Investments Reserve Funds taken into account. No part of any fund has been applied directly or indirectly for any purpose other than the class of business to which it is applicable.

A. C. THOMPSON, *General Manager.* J. BURN, *Actuary.* G. E. MAY, *Secretary.*

THOS. C. DEWEY, *Chairman.* W. J. LANCASTER, F. SCHOOLING, } *Directors.*

We report that with the assistance of the Chartered Accountants as stated below we have examined the foregoing accounts and have obtained all the information and explanations that we have required and in our opinion such accounts are correct and the foregoing Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affairs according to the best of our information and the explanations given to us and as shown by the books of the Company. No part of any fund has been applied directly or indirectly for any purpose other than the class of business to which it is applicable.

PHILIP SECRETAN, W. H. NICHOLLS, } *Auditors.*

We have examined the Cash transactions (receipts and payments) affecting the accounts of the Assets and Investments for the year ended December 31st, 1914, and we find the same in good order and properly vouched. We have also examined the Deeds and Securities, Certificates, &c., representing the Assets and Investments set out in the above account, and we certify that they were in possession and safe custody as on December 31st, 1914.

16th February, 1915. DELOITTE, PLENDER, GRIFFITHS & CO., *Chartered Accountants.*

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here, but we should not pass over Mr. Tushingham's vigorous dry-point studies (Nos. 7 and 12); Mr. Percy Robertson's excellent "Waterloo Bridge," "The Canongate," and "Holborn Bars," Mr. Lancaster's mezzotint "Old Age" and Mr. Hardie's "La porte des cordeliers, Falaise," with its unforced effects. M. Béjot betrays a light but virile touch in "Le quai de l'horloge, Paris," and we have particular pleasure in referring to Mr. L. B. Phillips' "The Lock" for its reversion to a non-modern style of work, of which too little is seen. Finally, we must notice Mr. D. J. Smart's mezzotint, "The Last Gleam," which ranks with the best works on exhibition in what proves an interesting collection.

FAWCETT CONSTRUCTION AT THE ANTIPODES.

AT the second page after end of letterpress will be found a photograph showing the application of this construction to circular sewage filter beds on the Swan River at Perth, Western Australia, from the design of the Minister of Works and Engineer to the Water Supply, Sewerage, and Drainage Department for the Metropolitan Area, and is the first time it has been chosen for work of this class outside these islands, where it has been largely used for foundations of all kinds.

There is also a photo of a long span bridge at Wallington, Surrey, designed by the Engineer to the London, Brighton and South Coast Railway to take any load up to a 14-ton steam roller, and on the first page is a photo of its application to Lord Kitchener's house at Broome Park, Canterbury, designed by himself.

This is a very wide application of the construction, especially as the girder is of a single type. All that is necessary to make sure of success is to work to the tables which give the sections and spacings for all ordinary loads and spans; the rule is also given by which these figures are arrived at, so that a junior can do the planning.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Building Costs after the War.

SIR,—I am glad to confirm the opinion of your correspondent.

As soon as the German occupation of Belgium has ceased there will be a general run on timber, tiles, galvanised sheets, glass, &c., either to rebuild the picturesque old towns or to build new garden cities in the neighbourhood (leaving finger prints of German "Kultur"), and for a generation to come these temporary buildings will be replaced by more ornate and permanent structures as these thrifty and industrious people save.

This alone would keep up prices, but when we consider the long period in other countries, particularly in our own, where building has not kept pace with the demand—as proved by the local authorities all over the country going in for housing schemes—and if, in addition to that, the taxes to pay for the war are so heavy, or trade is so bad, that railway and similar investments are not as profitable, landowners will build as the safest gilt-edged security to be obtained. And when we consider, too, that hand labour is the chief cost in any building, it can be readily realised that never again for a generation will prices or rents be so low as at present.

My personal experience confirms this. Quite recently I prepared the quantities for the extension of a residence, and both the architect and myself estimated the cost would be about £2,500. But the competition to secure the work and the small amount of work offering resulted in the very highest tenders being only just £2,500.—Yours, &c.,

W. H. WOOD.

Queen Square House, Leeds: March 8, 1915.

IN the House of Commons on Tuesday, Mr. Herbert Samuel stated that he was about to issue a circular to local authorities with regard to the desirability of restricting public works in view of the shortage of labour and other circumstances connected with the war.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Ashton-on-Mersey.—Proposed Council school, Park Road, for Sale District Education Committee. Mr. H. Beswick, F.R.I.B.A., County architect, Newgate Street, Chester; also

Sale.—Council school, Urban Road.

Birkenhead.—Isolation Hospital, Mill Lane, Liscard: tuberculosis pavilion (£2,250), for Wallasey Council.

CORNWALL.

Tywardreath.—Council schools. Mr. B. C. Andrew, architect, Biddick's Court, St. Austell.

CUMBERLAND.

Brampton.—Sanatorium, Stonebridge Lees. Mr. G. D. Oliver, F.R.I.B.A., County architect, 68 Lowther Street, Carlisle.

Carlisle.—Farm house, Hen Moss: additions. Mr. J. Stack, architect, 18 Bank Street.

Twelve houses, Boustead's Grassing, and twenty-four houses, Willow Holme. Council surveyor.

House, Wigton Road. Messrs. J. Laing & Son, builders, Milbourne Street.

Newbiggin.—Newbiggin Hall: alterations to stables, for the Dean and Chapter of Carlisle. Mr. J. H. Martindale, F.R.I.B.A., architect, Castle Street, Carlisle.

DERBYSHIRE.

Chesterfield.—Council school, Soresby Street, for 440 places.

DURHAM.

Darlington.—Council school, Hopetown.

Prudhoe.—Prudhoe Hall: alterations (£1,000), for the Northern Counties Joint Poor Law Committee.

ESSEX.

Canvey Island and Horsley Cross.—Proposed Council schools.

HUNTINGDONSHIRE.

St. Ives.—Theatre. Mr. H. J. Loftley, architect, Cattle Market.

KENT.

Canterbury.—Council school.

Crayford.—Two hundred cottages, Colyer's Lane, for the Building Society.

Erith.—The Erith Oil Works: extension (£500,000).

Maidstone.—Smallpox hospital.

Two houses, Old Tovil Road, for Mr. Norman Smith; also

Two houses, Postley Road.

Margate.—Twelve houses, Canterbury Road, Garlinge. Mr. F. J. Cornford, architect, St. Mildred's Road, Westgate-on-Sea.

Mersham.—Smallpox hospital. Mr. T. H. Wilde, architect, 30 Albemarle Road, Willenborough (£600).

Westwell.—Institution for the mentally defective.

LANCASHIRE.

Blackpool.—The Lancashire Cash Bakery Company, Threlfall Road: additions.

Business premises, Hornby Street: alterations, for Messrs. J. Cooper & Co.

Business premises and warehouse, Cookson Street, for Mr. S. H. Thomas.

Five houses, Bloomfield Road. Messrs. Cardwell Bros., builders, Devonshire and Waterloo Roads.

Two houses, Warbreck Hill Road. Messrs. R. Fielding & Son, builders, Stanhope Road.

Four houses, Woburn Road, for Mr. C. Wilson.

Ten houses, Wilford Street, Layton, for Mr. J. Williams.

Bury.—Proposed girls' home (£700), for B.G.

Chorley.—Proposed East Ward Council school.

Withington.—Children's hospital, for South Manchester B.G.

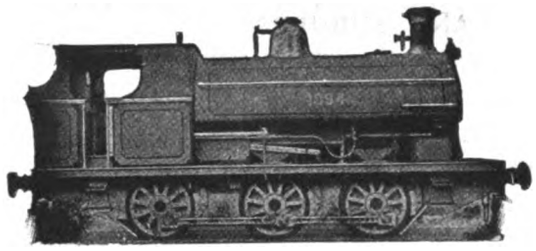
LINCOLNSHIRE.

Claypole.—Isolation hospital. Council surveyor.

MIDDLESEX.

Pinner.—R.C. Church.

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ENGLAND—*continued.*

NORFOLK.

Horsford.—Eight houses, for St. Faith's Council (£1,560).

Ovington.—Proposed cottages, for Wayland R.D.C. Mr. M. Peeke-Vout (of Caston), architect.

Swaffham.—Proposed children's home, Hilborough Road, for B.G.

NORTHAMPTONSHIRE.

Northampton.—Sub-stations, Lloyd and Adnitt Roads, for the Northampton Electric Light and Power Company, Ltd.

NORTHUMBERLAND.

Ashington.—Proposed Council school for 1,150 places.

Newcastle-on-Tyne.—Proposed public baths at Heaton, Benwell, and Walker (£29,700). Mr. W. J. Steele, City engineer.

NOTTINGHAMSHIRE.

Huthwaite.—Factory. Mr. E. W. Bostock, architect.

Mansfield.—Children's homes, for B.G. Messrs. Vallance & Westwick, F.R.I.B.A., architects, White Hart Chambers.

Nottingham.—Twenty-nine cottages and two blocks of tenements, Pennyfoot and Newington Street, for the Corporation.

OXFORDSHIRE.

Oxford.—Council school, Albert Street.

SOMERSET.

Coleford.—Council school and teachers' house. Mr. W. F. Bird, architect, The Island, Midsomer Norton.

STAFFORDSHIRE.

Wednesbury.—Electricity transformer station.

Wolverhampton.—Technical school, the Deanery site.

SUFFOLK.

Lowestoft.—Tuberculosis hospital, Normanston, for East Suffolk C.C.

SURREY.

Croydon.—Bungalow, Cedar Road, for Messrs. Hayward & Son.

Three houses, Richmond Road, for Mr. G. H. Dale.

Skating Rink: conversion into factory, for Messrs. Young & Macintosh.

Mitcham.—Proposed Post Office.

Mortlake.—Council School: addition. Mr. H. Hann, contractor, High Street, Collier's Wood, Merton (£610).

SUSSEX.

Angmering.—Cottages, for East Preston R.D.C. Mr. E. A. Harris, contractor (£744).

Bexhill.—Isolation hospital, Church Green (£6,500).

Littlehampton.—Isolation hospital.

WARWICKSHIRE.

Nuneaton.—House, Queen's Road, for Mr. S. Wills.

House, Broad Street; and four houses, High Street. Mr. G. Cooper, builder, Midland Road.

Three houses, College Street, for Mr. George Smith.

WORCESTERSHIRE.

Evesham.—Fifty working-class dwellings.

YORKSHIRE.

Castleford.—Two houses and a workshop, Smawthorne Lane, for Mr. J. Illingworth.

Six houses, Cambridge Street, for Mr. W. Thompson.

Darfield.—Working-class houses (£15,450).

Doncaster.—Isolation hospital (£22,000).

Municipal offices, Priory Place (£20,000).

Grimethorpe.—Houses, for Hemsworth R.D.C.

Halifax.—Fifteen houses and a shop, Elm Grange Estate. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers.

Hebden Bridge.—Warehouse, Hangingroyd Lane, for Messrs. R. Thomas & Sons.

Horbury.—Public hall. Mr. W. A. Kendal, architect, Bank Street, Ossett.

Huddersfield.—St. Joseph's R.C. Church, Commercial Street: parochial hall.

Sowerby Bridge.—Electric theatre, Wharf Street. Messrs. R. Horsfall & Son, architects, 22A Commercial Street.

Wrenthorpe.—Three houses, Snow Hill, Bradford Road. Mr. H. Dobson, architect, City Chambers, Wakefield.

WALES.

Glyncorrwg.—Proposed sixty houses, Dyffryn Rhondda, for the Imperial Cottage Society.

Penarth.—Police Station: additions and alterations.

Whitchurch.—Council school for 250 places. Mr. D. Pugh-Jones, County architect, County Hall, Cardiff. Messrs. Watts & Gale, contractors, Africa Gardens, Cardiff (£2,890).

SCOTLAND.

Coatbridge.—Y.M.C.A. buildings. Mr. T. Smith, architect, 3 Church Street.

Dundee.—Cottages, Dalgleish Road, for Messrs. Johnston & Baxter.

Cottages, Strathmartine Road, for Mr. P. Gray.

Glasgow.—House, Lochbury Road, Maryhill, for Mrs. M. J. Stevenson (of Temple).

Board school, Boden and Bernard Streets, Bridgeton.

Greenock.—Gateside Hospital: extension (£1,800), for the Greenock and District Combination Hospital Board.

IRELAND.

Belfast.—House, Osborne Gardens. Mr. J. St. J. Phillips, A.R.I.B.A., architect, Scottish Temperance Buildings.

"The Royal" Theatre: rebuilding.

Trim.—Labourers' cottages. Messrs. Blackwood & Jury, MM.R.I.A.I., architects, 41 Donegall Place.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 3,467. Feb. 10, 1914 (dated under International Convention Feb. 17, 1913).—A. Franck-Philipson, 914 Winona Avenue, Chicago, Ill., U.S.A. Bleaching of wood.

3,644. Feb. 12, 1914.—The Harter Co., 211 Madison Street, Waukegan, Ill., U.S.A. Automatically controlled gas-heated cooking apparatus.

3,761-2. Feb. 13, 1914.—F. M. Andrews, Hotel Saint Regis, 55th Street, 5th Avenue, New York, U.S.A. Apparatus for drying and heating sand, stone, grit, or other materials.

4,096. Feb. 17, 1914.—H. J. Trautmann and J. L. Copping, Blackman House, 374 Euston Road, N.W. Duct system of mechanical ventilation.

4,432. Feb. 20, 1914.—Hugo Hirst and C. H. Archer, 67 Queen Victoria Street, London. Electric heating apparatus.

5,081. Feb. 27, 1914.—J. B. Broadhead and Dennis Barker, Woodhouse Works, Brighouse, York. Lime or like mixing machines.

5,814. March 7, 1914.—Edgar Rhodes, the Briars, Scholes, near Leeds, and William Glossop, Highfield, Bramley Lane, Hipperholme, near Halifax. Dust-removing device for use in connection with machines for spraying tar on to road surfaces; and 5,815. March 7, 1914.—Spraying device of machines for sprinkling tar on to road surfaces.

6,484. March 14, 1914.—J. H. Thorpe, 36 Redcliffe Square, South Kensington. T-square attachment.

6,674. March 17, 1914.—David Waine and George Richards, Britannia Works, Lower Lichfield Street, Willenhall, Staffs. Padlocks and other locks.

6,818. March 18, 1914.—J. W. Bottomley, Whitehouse Engineering Works, Leeds. Tunnel kiln for glazing and enamelling tiles and for like purposes.

8,024. March 30, 1914.—P. W. Flavel, Eagle Foundry, Clarence Street, Leamington. Fireplaces.

8,202. April 1, 1914.—William Crossley, care of Thomas Tuckley, Lane Head, near Wolverhampton, and C. V. Knowles, 41 Sand Beds, Short Heath, near Wolverhampton. Levers (or tumblers) of one lever locks.

8,480. April 3, 1914.—M. Mouat, Dexter Avenue, Mount Roskill, Auckland, New Zealand. Closet seat guards.

9,794. April 21, 1914.—S. E. Foster, 15 Wood End Road, Erdington, Birmingham; W. H. Arundale, 2 Summer Road, Erdington; and C. H. Davies, 18 Norfolk Road, Erdington, Birmingham. Electric heating stove and radiator.

10,353. April 27, 1914.—P. H. Kane, 63 Cleveland Avenue, Buffalo, Erie, New York. Concrete reinforcing bars.

11,226. May 6, 1914.—Robert Le Bas, Room 24, 41 Cheapside, E.C. Device for facilitating escape from burning buildings or the like.

11,713. May 12, 1914.—John Garrien, Hotel Hastings, 12th Street, and Hawthorne Avenue, Minneapolis, U.S.A. Draught regulating contrivances for chimneys and the like.

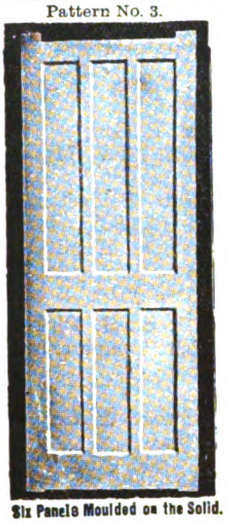
18,536. Aug. 19, 1914.—Rev. Frank Iliff, Levenshulme Rectory, Manchester. Apparatus for heating and ventilating compartments, or for ventilating only.

6,172. March 12, 1912.—Stewarts & Lloyds, Ltd., and J. G. Stewart, Clyde Tube Works, Coatbridge. Welded joint for iron and steel pipes and tubes.

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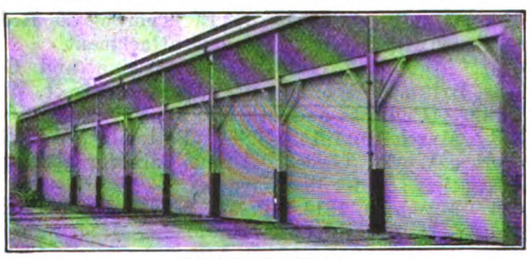
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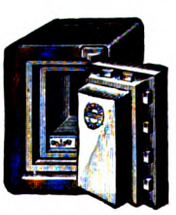
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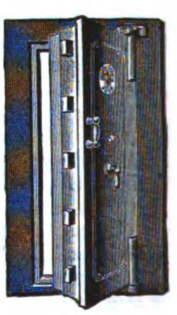
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THE
Architect and Contract Reporter.
FRIDAY, MARCH 12, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

ABBOTS LANGLEY.—March 23.—For erection of two pairs of semi-detached cottages near Bedmond, in the parish of Abbots Langley, for the Watford Rural District Council. Deposit £1 1*s.* The Council Offices, 9 Market Street, Watford.

ALNWICK.—March 16.—For construction of a permanent erection in the Market Place, containing public conveniences, for the Urban District Council. Mr. G. Wilson, surveyor, Urban District Council Offices, Green Bat, Alnwick.

ANDOVER.—March 17.—For contract No. 1 (erection of a Council school for 353 children at Andover) or contract No. 2 (heating installation, "Gould" system), for the Hampshire County Council. Deposit £2 2*s.* for contract 1, £1 1*s.* for contract 2. Mr. A. L. Roberts, architect to the Education Committee, The Castle, Winchester.

BANSTEAD.—March 23.—For erection of ten cottages at Canons Lane, for the Epsom Rural District Council. Mr. A. C. Williams, architect and surveyor, the Offices of the Council, Waterloo Road, Epsom.

BRADFORD.—Tenders are invited, all trades (separately), for proposed shed at Idle Road, Bradford. Mr. H. E. Priestley, architect and surveyor, 4 Bertram Road, Manningham, Bradford.

BRIDLINGTON.—March 29.—For erection of new buildings in extension of the Bridlington Grammar School. Deposit £1. Mr. J. Bilson, architect, 23 Parliament Street, Hull.

BURY (LANCS.).—March 24.—For conversion of the carriage shed at Bury (E.L.) into a carriage repair shop, for the Lancashire and Yorkshire Railway. The Engineer's Office, Hunt's Bank, Manchester.

CHELMSFORD.—March 22.—For erection of an engine house and incidental works at their Admiral's Park Waterworks, for the Town Council. Deposit £2 2*s.* Mr. P. T. Harrison, A.M.I.C.E., borough engineer, Municipal Offices, Chelmsford.

CARLISLE.—March 22.—For the work to be executed in the extension of the engine-driver's dormitory at Kingmoor, Carlisle, for the Caledonian Railway Co. Deposit £2 2*s.* The Company's Engineer, Buchanan Street Station, Glasgow; the District Engineer, Princes Street Station, Edinburgh; and the District Traffic Superintendent, Carlisle.

CASTLEFORD.—For all trades in erection of proposed house in Ings Lane, for the Castleford Gas Co. Mr. J. P. Padgett, architect, Carlton Chambers, Castleford.

CORBETS TEY.—For sundry alterations and repairs to the farmhouse, Little Sunnings, Corbets Tey, Essex. Mr. J. W. Stevens, architect and surveyor, Bridge House, 181 Queen Victoria Street, City, E.C.

CRUMLIN.—March 20.—For erection of two lock-up shops, shop and premises in Pontypool Road, for Mrs. George Jones. Deposit £1 1*s.* Mr. E. D. T. Jenkins, architect and surveyor, Station Chambers, Crumlin, Mon.

DARLINGTON.—March 18.—For erection of additions to the electric power station, Haughton Road, for the Corporation. Deposit £2 2*s.* Mr. G. Winter, borough surveyor, Town Hall, Darlington.

DEWSBURY.—March 17.—For the various works required in erection of a warehouse off South Street and School Street, for Messrs. Henry Cullingworth & Sons. Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects, surveyors and valuers, Market Place, Dewsbury.

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FREISTON (LINCS.).—March 17.—For erection of farm buildings and alterations and repairs to existing houses and buildings at (1) Whiteloaf Hall Farm, Freiston; (2) Ireland's Farm, Freiston, Ings, for the Holland County Council. Mr. E. J. A. Christie, county land agent, County Council Offices, Boston.

GARNFACH.—March 22.—For erection of a domestic arts centre at Garnfach, Nantyglo, Mon., for the Monmouthshire Education Committee. Deposit £1 1s. Mr. J. Bain, F.R.I.B.A., County Council Offices, Newport.

HALIFAX.—March 17.—For the execution of the work required (all trades) in the erection of a verandah to shops in the market hall, for the Markets Committee. Deposit £1. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HEBDEN BRIDGE.—March 15.—For the various trades required in the erection of a warehouse at Hangingroyd Road. Messrs. Sutcliffe & Sutcliffe, architects and surveyors, New Road, Hebden Bridge.

HORNCHURCH.—March 16.—For erection of public offices, for the Parish Council. Deposit 10s. Mr. W. C. Allen, clerk, Council Office, Hornchurch, Essex.

HUDDERSFIELD.—March 17.—For erection of a storage shed at the tramway depôt, Longroyd Bridge, for the Tramways Committee. Mr. K. F. Campbell, M.I.C.E., borough engineer and surveyor, 1 Peel Street, Huddersfield.

IRELAND.—March 17.—For rebuilding business premises at 22 Market Street, Lurgan, for Mr. A. G. Malcolmson. Messrs. Hobart & Heron, architects, Scottish Provident Buildings, Belfast. Messrs. M'Carthy & Brookes, surveyors, Scottish Provident Buildings, Belfast.

IRELAND.—March 23.—For building twenty-one labourers' single cottages and for fencing three plots, for the Dromore West Rural District Council. Charge 5s. Mr. H. Naughton, clerk, Dromore West.

IRELAND.—March 24.—For erection of a dispensary and medical officer's residence in the Moycullen dispensary district, for the Guardians. Deposit £1. Mr. A. Macdonald, architect, St. Francis Street, Galway.

IRELAND.—March 31.—For equipment of a cookery room at the Marlborough Street training college, Dublin. Mr. J. F. Fuller, architect, 179 Great Brunswick Street, Dublin.

LONDON, S.W.—March 19.—For the execution of ordinary works and repairs to the buildings in their charge in the districts of Hampton Court, Kew and Richmond, Newcastle-on-Tyne, and Leicester, during one year from April 1, for the Commissioners of H.M. Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

MANCHESTER.—March 24.—For the erection of baths at Barlow Road, Levenshulme, for the Baths Committee. Deposit £1 1s. The City Architect, Town Hall, Manchester.

MANCHESTER.—March 24.—For erection of a hospital block on their estate at Withington, for the South Manchester Board of Guardians. Deposit £1 1s. Mr. F. H. Overmann, F.M.S.A., 49 King Street, Manchester.

MORLEY.—March 16.—For the whole of the trades (in one contract) for erection of coal store at the gasworks. Mr. F. Turner, B.Sc., A.M.I.C.E., borough engineer and surveyor, Town Hall, Morley.

NORMANSTON.—March 16.—For the erection of a tuberculosis hospital at Normanston, Lowestoft (near the Oulton Broad Station), for the East Suffolk County Council. Send names by March 16 to the Clerk of the County Council, County Hall, Ipswich. Mr. H. M. Cautley, A.R.I.B.A., architect, The Thoroughfare, Butter Market, Ipswich.

NORTHENDEN.—March 17.——For alterations to their institution of Rose Hill, Northenden, for the Manchester Board of Guardians. Deposit 10s. Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

OLDHAM.—March 18.—For excavation for and erection of rubble retaining wall, &c., in Ripponden Road, near Barrowshaw, for the Surveyor's Committee. The Borough Surveyor's Office, Oldham.

OVENDEN.—March 20.—For the several works required in converting the premises known as "Craigie Lea," Ovenden, Halifax, into a children's home, for the Halifax Board of Guardians. Messrs. Clement Williams & Sons, architects, Post Office Buildings, Commercial Street, Halifax.

PEMBURY.—March 22.—For erection and completion of an engine house, engine foundations, &c., at the pumping station, for the Tunbridge Wells Corporation. Deposit £2 2s. Mr. W. H. Maxwell, A.M.I.C.E., borough waterworks engineer, Town Hall, Tunbridge Wells.

PLYMOUTH.—For any of the following works, for the Victoria Wharves, Ltd.—viz.: (1) alterations to offices; (2) paving approach road; (3) erecting transit shed at the Victoria Wharves, Plymouth. Messrs. Prigg & Lindon, civil engineers and surveyors, South Devon Chambers, Millbay Station, Plymouth.

READING.—March 18.—For the construction of a public sanitary convenience for women on land belonging to the Corporation adjoining the White Hart Hotel in St. Mary's Butts, for the Corporation. Mr. J. Bowen, A.M.I.C.E., borough engineer and surveyor, Town Hall, Reading.

SCOTLAND.—March 18.—For the following work required in connection with the construction of Albert Higher Grade Public School, Springburn, for the Glasgow School Board—viz.: (1) Digger, mason, and brick works; (2) Carpenter and joiner works; (3) Plumber work; (4) Slater work; (5) Plaster work; (6) Heating work; (7) Ironmongery work; (8) Painter work; (9) Steelwork; (10) Stair railing work; (11) Concrete and granolithic works; (12) Smith work; (13) Glazier work; (14) Patent roof glazing work; (15) Asphalt work; (16) Patent concrete floor, &c. Deposit £2 2s. each schedule. The School Board Offices (Master of Works Department), 129 Bath Street, Glasgow.

SCOTLAND.—March 22.—For the extension of Dumfries Post Office, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work and not for separate trades. Deposit £1 1s. The Postmaster, Dumfries, and H.M. Office of Works, 3 Parliament Square, Edinburgh.

SOUTHALL.—March 23.—The Southall-Norwood Urban District Council propose erecting 42 houses at Western Road and 12 houses at Norwood Road, and invite tenders for the direct supply of the necessary materials required in the construction of such houses; also for the labour required in the erection in various trades. Mr. R. Brown, M.I.C.E., M.I.Mech.E., F.S.I., &c., engineer and surveyor, Town Hall, Southall.

SHEFFIELD.—March 24.—For erection of public conveniences in various parts of the city, for the Health Committee. Deposit £1. Mr. C. F. Wike, M.I.C.E., city engineer, Town Hall, Sheffield.

SHERBORNE.—For alterations and additions to Lord Digby's Secondary School for Girls. Mr. A. Grisley, clerk, Greenhill, Sherborne.

SOUTHAMPTON.—March 22.—For erection of a new map store, Ordnance Survey Offices, Southampton, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. Mr. D. N. Dyke, H.M. Office of Works, 47 Victoria Street, Westminster, S.W., or at the office of the Director-General, Ordnance Survey Offices, Southampton.

STEVENAGE.—March 22.—For erection of eight cottages at Stevenage, for the Stevenage Urban District Council. Deposit £1 1s. Mr. W. Onslow Times, clerk, Council Offices, Stevenage.

SURFLEET.—March 27.—For erection and completion of three cottages and outbuilding in the parish of Surfleet, Lincs., for the Spalding Rural District Council. Messrs. Davis & Crowley, architects, 6 Double Street, Spalding, or at 2 York Row, Wisbech.

WALES.—March 15.—For erection of retaining walls and new latrines and the formation of new playgrounds and drainage at the Craig School, for the Pontypridd Education Committee. Deposit £2 2s. Mr. W. E. Lowe, engineer and surveyor, Municipal Buildings, Pontypridd.

WALES.—March 18.—For supply, delivery and erection of a shed at the W.D.S. pumping station, Penarth Road, Cardiff, comprising a steel roof, 72 feet by 45 feet, covered with galvanised corrugated sheeting, for the Corporation. The City Engineer, City Hall, Cardiff.

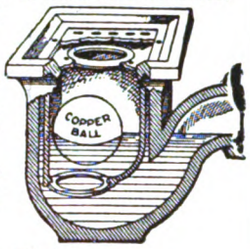
WALES.—March 29.—For erection of sixty-one houses at Capel, Llanelly (scheme No. 3), for the Llanelly Corporation. Deposit £5 5s. The Borough Surveyor, Town Hall, Llanelly.

WALES.—March 31.—For erection of a Council school at Penygroes (accommodation, 250 infants), for the Carmarthenshire County Council. Deposit £1 1s. Mr. W. V. Morgan, A.R.I.B.A., County architect, County Education Offices, Carmarthen.

WALES.—April 7.—For erection and completion of proposed Council schools at Llandyfrydog and Ty Mawr, and for additions, alterations, and repairs to the Council schools at Pentraeth, Llanfachreth, Llaingoch (Holyhead), and Llechylched (Bryngwran), for the Anglesey Education Committee. Mr. J. Owen, F.R.I.B.A., county architect, Menai Bridge.

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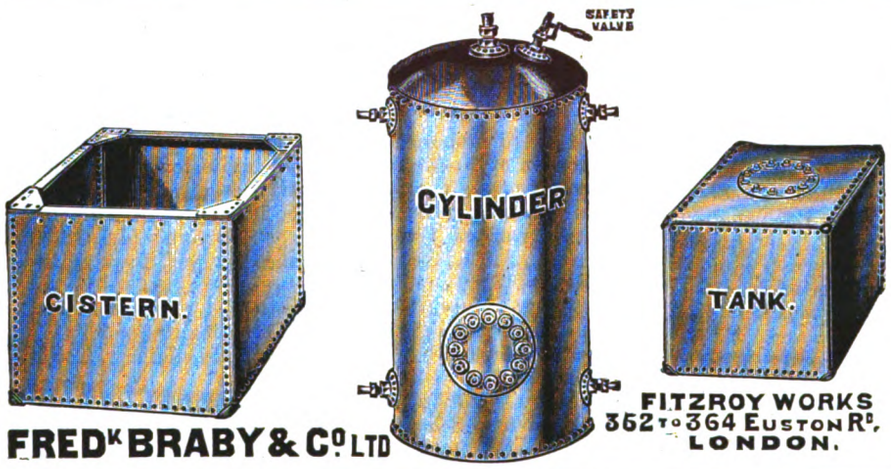
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TENDERS.

BIRMINGHAM.

For rebuilding premises, Great Hampton Row, Birmingham, for Messrs. Bodill, Parker & Co., Ltd.

Lowe & Sons	£3,695 0 0
Barnsley & Sons	3,555 0 0
Bishop	3,177 0 0
Dallow & Sons	3,084 0 0
W. J. WHITTALL & SONS, Birmingham (*accepted*)	2,983 0 0

BURY.

For an extension to reinforced concrete retaining wall at the electricity generating station, Chamber Hall, for the Corporation. Mr. J. A. SETTLE, A.M.I.C.E., borough engineer, Bury, Lancs.

Bolton Stone & Concrete Co., Ltd., Dawes Street, Bolton. Tender accepted as per Schedule of prices.

CONISBRO'.

For additions to the sewage disposal works, for the Doncaster Rural District Council.

J. ROGERS & SON, Conisbro' (*accepted*) . £4,513 12 3

EVESHAM.

For carrying out the Harvington water supply, for the District Council. Messrs. WILLCOX & RAIKES, engineers.

Press & Son	£2,172 15 6
Boswell & Co.	2,142 11 1
Willmott	2,108 0 0
Staveley Coal and Iron Co.	2,030 10 0
Hunter & Co., Ltd.	2,020 7 7
Walling & Davis	2,014 0 0
W. HODGE & SONS, Northfield (*accepted*)	1,940 15 9

LONDON.

For installing heating apparatus in connection with the erection of the Thornfield Road School, Hammersmith, for the London County Education Committee.

Harlow & Son	£1,195 0 0
Boyd & Co.	949 0 0
Brightside Foundry and Engineering Co.	909 0 0
Yetton & Brockett	898 0 0
Biggs	850 0 0
Cannon & Hefford	839 0 0
Truswell & Son	829 0 0
Cash & Co.	828 0 0
R. H. & J. Pearson	819 0 0
Cannon & Sons	815 0 0
PALOWKAR & SONS, 90-91 Queen Street (*recommended*)	778 0 0

RADCLIFFE.

For the construction and completion of sixteen dwelling-houses (in eight blocks of two each) on the Stand Lane site, for the Radcliffe Urban District Council. Mr. W. L. ROTHWELL, architect. Quantities by Mr. W. L. ROTHWELL, surveyor.

WM. RIGBY, LTD., Radcliffe (*accepted*) . £2,896 0 0

SCOTLAND.

For additions to the administrative block of the Heathfield Hospital, Ayr, for the treatment of tuberculosis. Mr. J. YOUNG, borough surveyor, Ayr.

Accepted tenders.

M. McUich, Robsland Avenue, digger, brick and mason works	£703 15 8
J. & D. Meikle, Main Street, joiner work	625 0 0
Auld & Sons, Sandgate, slaters and plumbers	247 0 0
McGilvray & McCulloch, Dalblair Road, painter work	169 5 6
W. A. Vass, Fort, plaster and cement	146 14 0
Reid & Co., High Street, electric work	71 12 0

For the erection of a new tuberculosis hospital at Heathfield (contract 2).

Accepted tenders.

D. & J. Milligan, 46 Kyle Street, joiners	£1,210 11 11
T. McWhirter, 54 Smith Street, bricklayer	883 9 9
J. Mickle & Son, 13 River Street, slaters, plumbers, &c.	594 19 3
W. Willock & Son, Newmarket Street, painters	356 16 7
M. Glin, Somerset Road, plasterer, &c.	289 17 10
W. Auld & Sons, 70 Sandgate Street, electric light, telephone, and bells	143 0 0

All of Ayr.

ROCHFORD.

For the erection of a police station at Rochford, for the Essex Standing Joint Committee.

MYALL BROS., Southend (*accepted*) . . £3,585 18 0

WALES.

For the erection of the first section of the school for girls, for the Governors of the Wrexham County School. Mr. WALTER D. WILES, County architect.

E. CLARK, Wrexham (*accepted*) . . . £5,887 0 0

PRUDENTIAL ASSURANCE COMPANY, LTD.

ALTHOUGH the experience of the last seven months has given most of us a certain familiarity in talking of millions of men or millions of money, yet we can scarcely conceive of anyone reading unmoved the stupendous figures of the Prudential Assurance Company. At last week's annual general meeting at the chief office, Holborn Bars, E.C., Mr. Thomas C. Dewey, the chairman of the Board of Directors, in his speech, seemed scarcely to be able to think in less than a million, or at the very lowest 500,000. For instance, the total income of the company during 1914 was seventeen millions. The claims paid were for seven millions; the number of policies was twenty-one millions, and they assured a sum of well over three hundred and fifty millions; the total assets were ninety-one millions (an increase of four millions). During the first seven months of the year results were phenomenal, and pointed to new records in every department. But the business of the company was too national in character for it to escape the effects of the war, and in consequence expectations were only partly realised.

Here we may mention the arresting fact that some 700,000 policyholders in the Prudential have answered their country's call. At once the directors had to decide whether the condition on the policies excluding war risks was to be waived or not; and it was patriotically agreed not to charge any extra premium to existing policyholders. In the ordinary branch it was decided that for existing policies on the lives of members of the Regular Army and Navy the first £250 of assurance should be subject to no extra premium, and that £5 5*s*. per cent. should be charged on the excess over £250. For existing policies on the lives of all other members of his Majesty's Forces, including Territorials and Kitchener's Army, it was agreed that no extra premium should be charged. A special table has been drawn up for all combatants at the Front who may desire either assurance or increased assurance.

Here are precise totals. In the ordinary branch the number of policies issued during the year was 65,751, assuring the sum of £6,318,843, and producing a new annual premium income of £424,353. The premiums received during the year were £5,035,625, being an increase of £115,107 over the previous year. In addition, £10,315 was received in premiums under the sickness insurance tables. The claims of the year amounted to £4,014,658. The number of deaths was 9,351. The number of endowment assurances matured was 24,966, the premium income of which was £136,735. The number of policies in force at the end of the year was 922,505. In the industrial branch the premiums received during the year were £8,176,202, being an increase of £301,746. The claims of the year amounted to £3,373,850, including £398,360 bonus additions. The number of claims and surrenders, including 6,731 endowment assurances matured, was 392,883. The number of free policies granted during the year to those policyholders of five years' standing and upwards who desired to discontinue their payment, was 103,514, the number in force being 1,947,556. The number of free policies which became claims during the year was 46,364. The total number of policies in force in this branch at the end of the year was 20,085,010: their average duration exceeds thirteen years.

The assets of the company, in both branches, as shown in the balance sheet, are £91,202,344, being an increase of £4,209,341 over those of 1913. The total surplus of the two branches, as shown by the valuation, is £3,337,675.

In the ordinary branch a reversionary bonus at the rate of £1 10*s*. per cent. on the original sums assured has been added to all classes of participating policies issued since the year 1876. In the industrial branch a bonus addition, ranging from £2 10*s*. to £12 10*s*. per cent., will be made to the sums assured on policies of over five years' duration which become claims either by death or maturity of endowment from March 5, 1915, to March 2, 1916, both dates inclusive.

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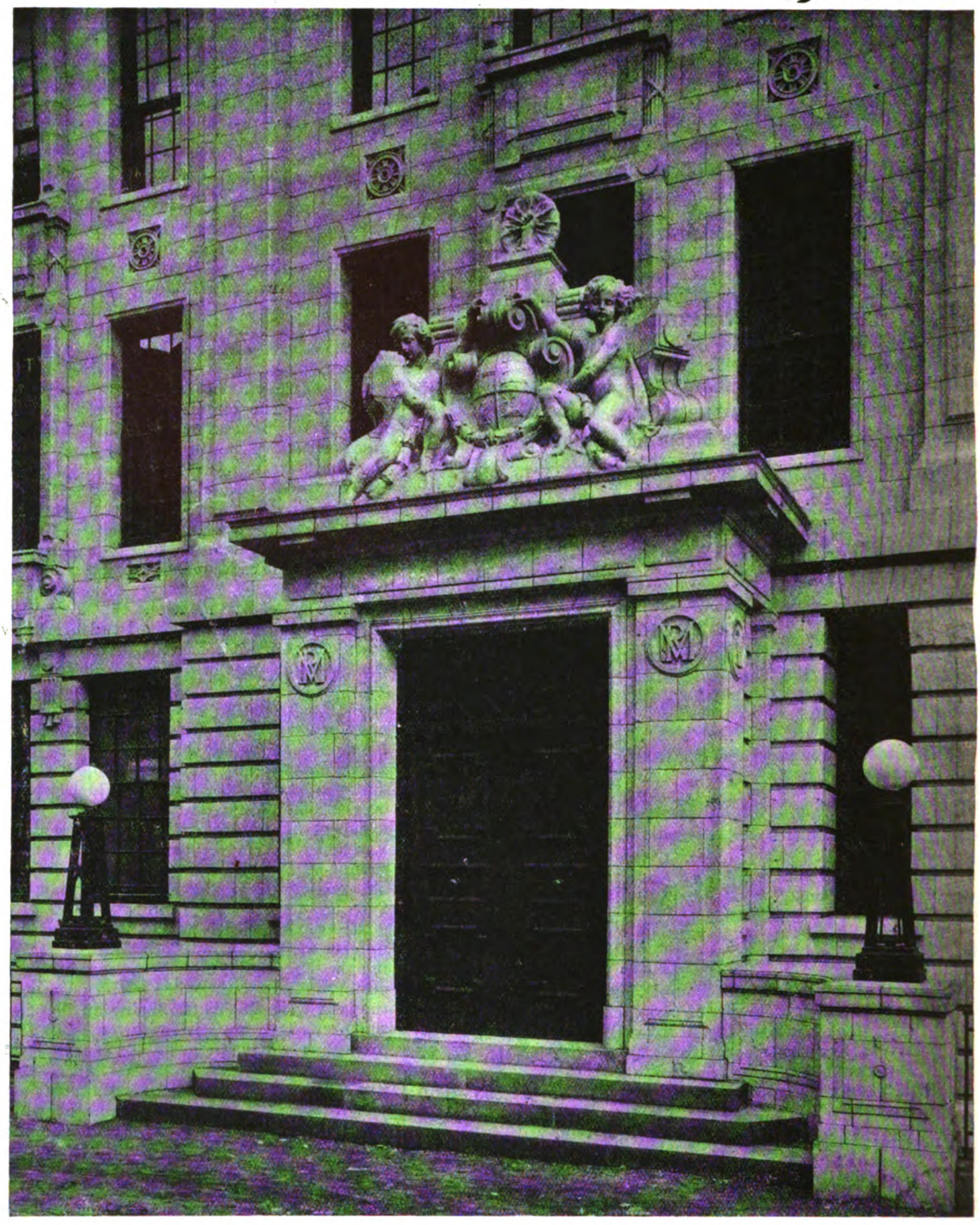


Illustration
Doorway of New Offices Metropolitan Railway Co., Allsop Place, Baker Street, in Gibbs & Canning's White Pentelica

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A NEW MECHANICAL FILTER.

For many years Messrs. Mather & Platt, Ltd., have been engaged in the construction and installation of large-sized pressure filters for public or industrial purposes, and the firm is responsible for some of the largest plants for

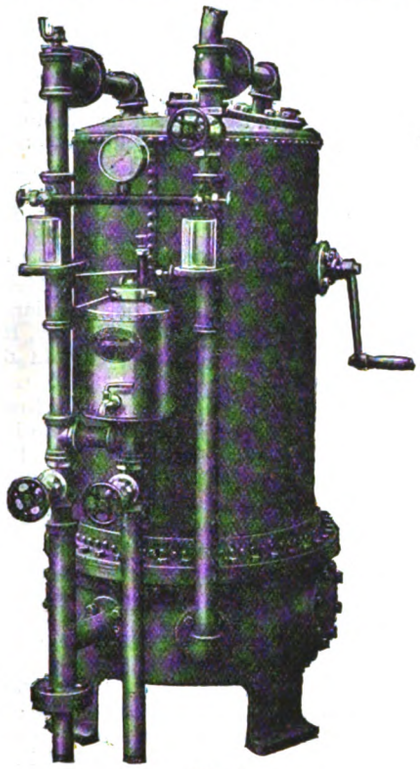


Fig. 1.

the filtration and purification of water at home and abroad. With the view of meeting the requirements of compar tively small users, Messrs. Mather & Platt have now placed on the market a new type of filter specially designed to fulfil the conditions met with in the water supply of public institutions, country mansions, tea and rubber estates, &c., where a cheap and efficient plant for the purification of the water supply is just as much a necessity as in the case of municipalities and large works.

The new filter is constructed on the mechanical principle which has achieved such satisfactory results in the larger sizes. The old-fashioned method of purifying water was by means of sand beds. The passing of water through a bed of sand is, however, not in itself effective for intercepting and destroying bacteria. This is accomplished in the case of open sand filters by allowing the water to run for a considerable period, forming a natural gelatinous film on the surface of the bed. With mechanical filters this film is formed by the addition of a solution which coagulates the fine particles in the water. Messrs. Mather & Platt have recently patented an apparatus for passing into the water supply an exact percentage of the required coagulant, the percentage remaining the same irrespective of the quantity of water passing through the apparatus.

The new filter is illustrated in fig. 1. Its construction will be readily understood by reference to fig. 2. The water enters at the top and, after percolating through the filtering media, passes through the nozzles into the cast-iron base, and is delivered through the clean water pipe and valve. A special feature is the design and arrangement of nozzles which are fitted into the base. They are made of phosphor bronze with copper perforated domes, and give even distribution over the whole bed both when filtering and during the washing operation. They are screwed in from the underside, access doors being provided so that any nozzle may be taken out, examined, and replaced without disturbing the filtering medium.

For supplying the coagulating solution, a small copper tank is provided which normally holds one day's supply; this tank is secured to the pipes as an integral part of the filter. It is fitted with special valves, a sight glass, and regulating jets, by means of which the required quantity of chemical is admitted to the water. Several of these regulating jets are provided, each to give varying proportions of solution, and when it is desired to change them one jet can be substituted for another in a few seconds. To control the supply of solution according to the rate of flow, Messrs. Mather & Platt have introduced a special feature in the shape of an adaptation of the Venturi tube, which ensures that the supply of chemical shall always be in direct proportion to the water supply. It has no moving parts, the action being purely a hydraulic one and absolutely positive.

The new filter is complete and self-contained. It can be readily transported and erected in any convenient position without special foundations or specially skilled labour It can be mounted on a motor-waggon or other vehicle, and connected to a pump driven off the main engine enables pure water to be instantly attainable at any time or place where there is a water supply. It is obvious that this would be a great advantage to troops and gangs of workmen engaged in out-of-the-way places where the quality of the water is often very doubtful.

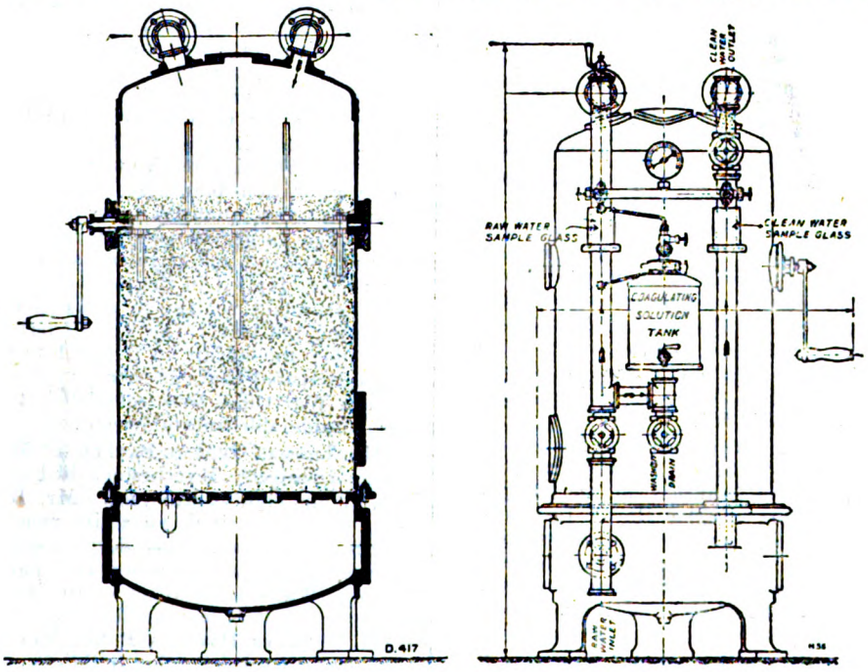


Fig. 2.

Messrs. Mather & Platt have just issued a catalogue relating to their new small filter. Copies can be obtained on application to Park Works, Manchester.

Dunfermline Dean of Guild Court had again under consideration last week plans for the erection of experimental cottages by the Carnegie Dunfermline Trust. The Dean of Guild, in announcing that the Court could not pass the plans as at present presented, remarked that to do so would be a retrograde instead of a forward movement.

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VARIETIES.

The Royal Scottish Academy, at a meeting held in Edinburgh, decided that no Associates should be elected this year.

The alterations to be carried out at the schools of St. Bartholomew the Great, West Smithfield, at the instance of the Board of Education, will cost about £1,800.

Wortley Rural Council have resolved to proceed with alterations and improvements to the Tankersley sewage works at a cost of £1,020.

The Newcastle City Council last week approved a scheme of extension on the Quayside which is estimated to cost £51,000.

The Barnsley Town Council on Tuesday last accepted tenders amounting to £22,465 for the erection of a Town Hall and Municipal Offices on the Church Street site.

At a Local Government Board inquiry at Leeds last week into applications for loans amounting to £186,000, one of the items was for the extension of the Meat Market in New York Street at a cost of £22,930.

The Bradford City Council is to be asked to agree to an extension of the spending powers of the Art Galleries and Museums Committee to the extent of ¼*d.* in the pound on the rates.

The North Derbyshire Isolation Hospitals Committee have approved sketch plans for the proposed convalescent blocks at their four hospitals at Morton, Mastin Moor, Langwith, and Newbold.

The architectural staff of the Local Government Board of Scotland is to be increased by the appointment of an assistant architect in order to cope with the greatly extended work in connection with the development of Rosyth, the building of 3,000 houses there, and the town-planning scheme which has been submitted to the Board by the burgh of Dunfermline.

The Alma Tadema Memorial Committee will, it is understood, devote the whole of their funds to the purchase of Sir Lawrence's famous art and archæological library, which includes portfolios of drawings and studies by him, as well as memoranda and photographs. The collection will be deposited, together with Onslow Ford's bust of the painter, in the Victoria and Albert Museum.

At a meeting of the committee of the various societies of men employed in the building trade, held at the Labour Trades Hall, Great Newport Street, London, on the 5th inst., a resolution to appoint a deputation to wait upon the master builders for the purpose of discussing the question of an advance to meet the increased cost of living was adopted, 2*d.* an hour being suggested as a fair advance. The meeting was adjourned for a week for the Management Committee to appoint delegates, two from each committee.

Mr. H. A. Chapman, an inspector of the Local Government Board, held an inquiry at Tamworth with regard to the unopposed application of the Town Council for sanction to borrow £15,000 for purposes of a scheme under Part III. of the Housing of the Working Classes Act, 1890, for the erection of working-class dwellings. The proposal is to erect sixty-seven houses, of three types, on a site owned by the Corporation, known as the Bradfords, adjoining Lichfield Road. The estimated cost is £14,561.

The Royal Institute of British Architects has compiled a record of over 1,200 members of the architectural profession who have joined various branches of the Imperial forces. It includes members of the Royal Institute of British Architects and of its nineteen allied provincial societies, of the Architectural Association, and of the Society of Architects, as well as students of the various schools of architecture recognised by the Royal Institute. The list is being added to every day.

The Local Government Board has decided to issue a Provisional Order applied for to enable the Sheffield Corporation to erect shops in connection with the proposed new offices in Bow Street, and to amend Section 81 of the Sheffield Corporation Act, 1890, so as to enable the Corporation to contribute towards the expenses of private streets works. The Local Government Board has sanctioned the borrowing of £24,680 for the erection of baths at Hillsbro' and Wincobank, washhouses at Daniel Hill, and a central laundry near Penistone Road.

The following resolution has been passed unanimously at a joint meeting representative of the branches of the building trade in Wolverhampton and district:—"That in consequence of the greatly increased cost of food and other commodities application be made to the Wolverhampton and District Building Trades Employers' Association for an increase in wages of 4*s.* a week as a war bonus towards meeting the increased cost of living, and that we request the Association to receive a deputation of the operatives at an early date."

The second annual general meeting of the Faculty of Surveyors of Scotland was held recently in the Christian Institute, Glasgow. Mr. Howatt, the President, presided over a large attendance of members. The President, in moving the adoption of the annual report and accounts, referred to the work which the Council had performed and to the considerable increase in membership of the Faculty during the past year. The report and accounts were unanimously adopted. The following office-bearers for session 1915 were elected:—President, Mr. Alan K. Smith, Edinburgh; Vice-President, Mr. John Baxter, Glasgow; Secretary and Treasurer and Secretary of the Examining Board, Mr. D. E. Wallace, C.A., Edinburgh; General Council, Messrs. James Barr, T. Fairbairn, William Gauldie, William Howatt, Robert Jerden, F. H. Lightbody, John Murray, R. Murray, Anthony Purdie, George B. Walker, Archibald S. Watson, and John Webster.

At the monthly meeting of the Doncaster Town Council, provisional plans were passed for proposed municipal buildings and for a new isolation hospital. The Mayor stated that the plan and estimates of the proposed municipal office had been before the Council in committee. The plan was only a provisional one, and not one they would adopt if they were going to commence next week. They had to submit a rough plan before the Parliamentary Committee. Roughly speaking, the new buildings would cost £30,000. The property to be acquired was estimated at £5,200, erection of buildings £20,000, equipment and sundry expenses £4,800. The estimate for the isolation hospital was as follows: Accommodation for sixty beds and wards, £18,000; porter's lodge, £300; administrative block, £3,700; furniture, £2,100; land, £1,600; total, £25,700. Other schemes passed included the enlargement of the tramcar shed in Greyfriar's Road at a cost of £2,550.

At the Newcastle Town Hall Mr. M. K. North held, on behalf of the Local Government Board, an inquiry relating to the application of the Newcastle Corporation for sanction to borrow £29,700 for baths at Heaton, Benwell, and Walker. Mr. North explained at the outset that the Treasury had suggested to public bodies that borrowings during the war should be restricted to schemes absolutely necessary. If evidence of urgency and necessity were not forthcoming, the Local Government Board would not sanction the expenditure. The Town Clerk explained that the Council decided before the war to go on with the scheme. The Corporation had agreed to pay out of revenue for architects' and quantity surveyors' fees approximately £860. The Inspector asked if there was no clause in the contract making the payment subject to the loan. The Town Clerk replied in the negative. The Inspector said in future it would be best to make such agreements subject to getting the loan. The Town Clerk thought it would be impossible and unfair to the architects and surveyors. It was anticipated that, as soon as current building contracts for the War Office were completed, there would be locally very considerable unemployment.

Mr. Thomas Groome Barker (of Messrs. Barker, Ellis & Jones, architects, Manchester) died suddenly on Saturday last, in his eighty-sixth year. Mr. Barker was, until last year, when he retired, an active member of the firm. All his life he had been a most devoted student of architecture—he was a pupil and afterwards a partner of the late Mr. Edward Walters, architect of the Free Trade Hall. Mr. Barker assisted in making the drawings for the Free Trade Hall, Williams Deacon's Bank, Mosley Street, and many large warehouses and other buildings of that date for which Mr. Walters was architect, and in 1865 he and the late Mr. Ellis took over the practice. Among his works may be mentioned: The Manchester Grammar School (Langworthy Building), the old Stock Exchange (now pulled down), the Commercial Buildings, Cross Street, the *Manchester Guardian* Offices, Cross Street, the Union Assurance Buildings, Chapel Walks, Barton Union Offices, restoration of Flixton Church, the Deaf and Dumb Schools (Pendlebury wing), extensions to the Manchester and Liverpool District Bank and the Williams Deacon's Bank, and a number of houses and branch banks in Lancashire and the neighbourhood. He spent a considerable time in Italy, and travelled in France, Belgium, Germany, America, Spain, Greece, and Egypt.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, March 22.

Royal Society of Arts : Cantor Lecture II., entitled "House Building," by Mr. M. H. Baillie-Scott, at 8 P.M.

Tuesday, March 23.

London Topographical Society : Annual General Meeting at the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

Wednesday, March 24.

Carpenters' Hall : Paper entitled "Life, Work, and Influence of William Blake," by Professor Selwyn Image, M.A., at 7.45 P.M.

Thursday, March 25.

London University : Paper entitled "Bruges and Ypres," by Mr. Arthur Stratton, F.R.I.B.A., F.S.A., at 5.30 P.M.

Saturday, March 27.

Edinburgh Architectural Association : Visit to Edinburgh Ladies' College, Queen Street.

THE PUBLIC VIEW OF TOWN PLANNING.

In order that the benefits of town planning may be enjoyed to the full it is essential that the public, and especially that portion of the public which makes up the membership of local authorities, should realise in what way town planning on a properly organised system is superior to the haphazard manner in which most of our cities, towns, and villages have developed. Town planning can do little to improve existing conditions in cities, except on paper, for the financial part of grandiose schemes is too often neglected by their authors, and unless the alteration of a city presents great advantages in furnishing improved facilities for traffic, the mere beautification of an ugly area gives, so far as the public can recognise, insufficient recompense for the expenditure that must be incurred.

But town planning can do a great deal towards preventing a repetition of the evils that have resulted from haphazard growth and furnish conditions of life that are not only more pleasant and more healthy, but otherwise aid in efficiency of work. The provision of properly planned factory areas, with facilities for transit by canal, railway, and road, will greatly benefit the manufacturer and add materially to the industrial resources of the city. The provision of houses with gardens, with plenty of light and air, will greatly benefit the workman and his family and also add to the industrial efficiency of the city by making healthy, happy, and efficient workers.

The part that town planning—that is, forethought in the making of towns—plays in preventing subsequent evils is well illustrated by the work that has had to be done by many governing bodies in our own time in remedying evils that had become insupportable. Sheffield has spent £100,000 in removing slums in the old Crofts area, which covered five acres. Liverpool, up to 1912, has spent £1,135,000. The Metropolitan Board of Works spent £1,500,000 in pulling down old houses. The London County Council spent £1,114,800 in clearing insanitary areas, and in the Tabard Street area alone spent £366,000 for 16½ acres of land containing 625 insanitary dwellings. Manchester spent £152,623 in displacing 2,635 persons, and so the tale goes on.

Much of this expenditure quite obviously might have been saved if foresight had been exercised, but it is not yet sufficiently recognised how great are the losses and disadvantages which a city suffers from these things. In the Bevington Street area of the Liverpool Corporation, where slum property was removed and the slum-dwellers rehoused on the same area in improved dwellings, it was found that the general death-rate fell by more than half. Surely no more need be said in favour of the advantage of town planning or foresight in regulating a town's development and growth.

It is advisable to make clear the distinction between town planning and housing. Housing pure and simple deals with the problem of improving old and insanitary houses, either by structural alterations or by re-housing schemes, and also deals with the necessary stimulus for the provision of new houses where the existing supply is inadequate. Town planning, on the other hand, does not deal with the actual provision of houses, but forms the basis upon which good housing schemes may be formulated. By a wise control of the land, by specifying the general conditions which must govern its development both as to transit provision and open spaces and the limitation of houses, it can prevent some of the evils incidental to overcrowding and can checkmate land sweating—that is, the desire to get the maximum return from land irrespective of the comfort and health of its inhabitants.

In all our old cities, which when they were built had the country close around them, practically no provision for open spaces was made, and it is now an expensive thing to provide parks and spaces for city dwellers. Even in those cities where such provision is made parks are usually badly distributed, leaving many parts of the town still remote from such amenities. Proper laying out of the city would provide that every house is within reasonable distance of some open space.

Town planning, under the present Act, requires as its first step the preparation of a scheme. The first stage is the selection of the area and the second the actual preparation of the scheme itself for the selected area. In the selection of a suitable area the Town Planning Committee of the local authority must be careful to exercise a wise discretion.

Owing to the diversity of conditions in various localities the problem will scarcely ever be the same for two Local Authorities. As the Local Government Board must satisfy themselves that the land is likely to be used for building purposes, however remote the period at which it will be built up, it is, of course, only possible to include in such an area land where there is some prospect of building development taking place. In many towns this will cover the whole of the undeveloped area within the borough. In Urban Districts it will probably cover areas contiguous to existing towns, or where, for some special reason such as new transit facilities, the land is likely to be opened up for residential or manufacturing purposes.

It will hence be necessary to consider (1) what land is likely to be used for building purposes within the area

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of the Local Authority; (2) what land belonging to a neighbouring Authority is essential to the formation of a scheme; (3) what land must be excluded. In determining the boundaries of a scheme there are some general propositions that may be regarded as axioms. The boundaries generally should not be along a road, as it is important to have the road under control for widening and general development purposes. If unprotected on one side, a row of houses crowded together might be built, and so entirely spoil the amenities of the district. It is, therefore, advisable for the boundary to run at a distance of a good building-depth on one side or other of the road. Similarly, a stream or river makes a bad boundary.

It is advisable to prepare an ownership map, so that an owner's property is not cut in two. This latter event leads to friction, and the remainder of his property cannot be included without delay and without repeating all previous proceedings. It is, therefore, much better to include or exclude an owner entirely, as it is easy to exclude afterwards, but impossible to include any land not originally shown in the scheme, or about which notices have not been served.

One particular in which foresight is imperatively necessary in town planning is the provision of roads, or perhaps it may be better to say—for roads. It is not always necessary to make roads at first of the maximum carrying capacity which increased traffic may in the future demand; but in laying out roads sufficient width should be reserved, so that in the future the land required may be available without the impediment of costly purchase of built-up property. It may, for example, be desirable to reserve a width of 100 feet for the future, though a road 20 feet wide may be ample for present requirements. The width reserved may very well for a time be largely turf, or even planted with trees. There are two great factors which make the provision of possible wide road surface desirable—the increase of tramway services and the rapid increase of motor traffic. Both of these are the result of the fundamental principle of modern town planning, the spread of population over a wider area, by the restriction of the number of houses to be placed on each acre. Hence the town expands in area, the distances to be traversed to reach a centre are increased, and additional opportunity for rapid transit is a vital element.

In arranging the residential area of a town planning scheme care must be taken to allow of elasticity. Every tenant does not want a tenth of an acre for his house and garden. Some men prefer a small garden with plenty of open space about it, others want all the garden they can get and an allotment besides. Therefore the gross acreage should be taken to determine the number of houses per acre, be it ten or twelve, or whatever may be selected.

A most useful exposition of town planning from the public point of view is to be found in a book by Mr. George Cadbury, jun.,* which should be in the hands of every member of a Local Authority, although we are not prepared to endorse all the views held by the author, particularly those relating to the desirability in his eyes of municipal ownership.

NOTES AND COMMENTS.

NATURALLY the Government's war policy of discouraging the carrying-out of public works that involve building hits industries concerned, and not merely professional industry. Amongst the industries badly hit is that of slate-quarrying, and the Carnarvonshire County Council has adopted a resolution moved by Mr. R. M. Greaves, calling the attention of the Government to the acute depression in the slate-quarrying industry, which resulted in substantial sums being payable in relief work, and expressing the opinion that Welsh slate had merits which entitled it to a much greater measure of support from Government sources than it at present received.

In introducing the resolution Mr. Greaves said that the Government evidently did not realise the extent of the depression in that county, where there must be some 3,000 fewer men employed in the slate quarries than there were some time ago. The consequence was that certain improvement works had been pushed forward, and as the men employed were often unaccustomed to that class of work it followed that the expense was more than it ought to be. Then there was the question of rating. The decreased production of the quarries had to be met by a proportionate decrease in the rating of those properties and an increase on other classes of property. It was very difficult to induce the Government, especially the War Office, to use slate to the degree they ought to. Those who were interested in the trade had taken immense trouble, and had gone to a great expense in preparing models to show to the departments, but so far they had been quite unable to obtain an interview.

Some time ago, in reply to the Clerk of the Merionethshire Relief Committee, Mr. G. Riley, Director of Army Contractors, wrote: "I beg to inform you that the matter has received careful consideration, but it is regretted that an extended use of Welsh slates at the present time is impracticable. Very few permanent buildings, for which natural slates are normally used, are being undertaken at present. With regard to temporary buildings, the extra cost of natural slates, the additional time required for the work, and the extra cost of the stronger form of construction required, render it imperative to adopt other materials. I should add, however, that the alternative materials are almost entirely manufactured in this country."

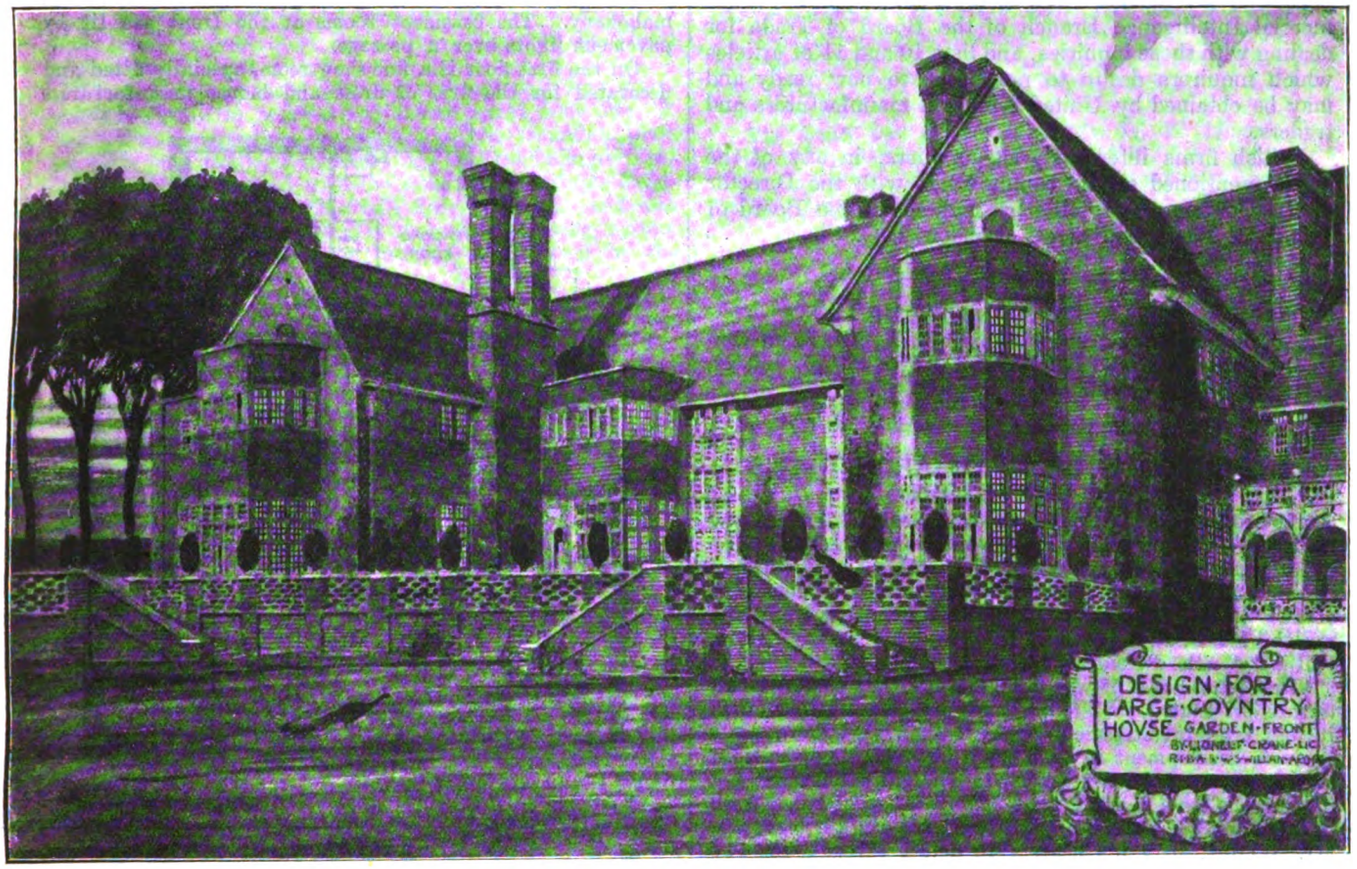
Naturally this reply did not meet approval at the Council meeting.

Barnsley Town Council do not mean to let the claims of war finance stop their project for a new Town Hall, but have decided upon the acceptance of tenders amounting to £22,465 for the erection of a new Town Hall and Municipal Offices on the Church Street site. In moving the adoption of the recommendation, Alderman Wray felt there were more reasons why the Council would be justified in proceeding with the project than there were against the step. The Council were practically committed to the scheme before the war occurred, and they were honourably bound to go forward. It was a necessary scheme, and the widening of Church Street, which would be possible, was perhaps more urgent. He could see no advantage in waiting ten years, for there was no prospect of obtaining labour and material, or the borrowing of the money under more advantageous terms than at present. He agreed that objection might justly be raised, and a suggestion had been received from the local Chamber of Trade that the matter should be adjourned for another year. He could not see any advantage by doing so, and was pleased to say that by utilising the money in the sinking funds the Council would be able to borrow for the scheme at 3½ per cent. interest instead of lending the money to other Corporations at that rate. He estimated that it would be two years before the building would be opened. Therefore, there would be a considerable period before the effect of the scheme was felt, and it was understood that the Council would not commit themselves to any other large scheme except in regard to health. The tenders had come within 2½ per cent. of the architect's estimate, which was made prior to the war.

Glasgow is to turn its Kelvingrove Art Galleries into a military hospital in consequence of the favourable response of the Parks and Galleries Committee of the Corporation to the following letter from Colonel Donald J. Mackintosh, M.V.O., Medical Superintendent of the Western Infirmary, Assistant Director of Medical Ser-

* *Town Planning*, with Special Reference to the Birmingham Schemes. By George Cadbury, Jun., Member of Birmingham City Council Town Planning Committee. With illustrations and maps. (London: Longmans, Green & Co. 7*s.* 6*d.* net.)

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vices in the Lowland Division of the Territorial Force, under whose charge the hospital will be:—"I have the honour to request that you will favourably consider the proposal I lay before you—namely, a plan for the utilisation of the Art Galleries as a military hospital of 520 beds. The building could be made use of as a hospital with practically no alteration to the structure. I would not have made the request had the building not been exceptionally suited for use as a hospital at a time of national emergency, and I know of no public building in the city which could be more easily adapted for such a purpose. I would, therefore, respectfully ask you to deal with this application in the most favourable light possible, as the matter is urgent."

In a paper read before the Society of Antiquaries of Scotland on "Some Recent Discoveries in St. Andrews," Mr. D. Hay Fleming, LL.D., F.S.A.Scot., dealt with several discoveries in the west front of the cathedral, one of which, he said, confirmed the belief that for a time the nave was at least two bays longer than it now is, and proved conclusively that that front did not occupy the position originally intended for the termination of the building. Another of the discoveries explained the hitherto very puzzling feature of the incompleted ragglets suggestive of a western porch; and also proved that before the west front was partly reconstructed there had been above the great door an open arcade looking into the interior of the church. Several minor discoveries in the cathedral were also mentioned, notably a built socket-hole, one of the sides of which is formed of a Norman capital in beautifully fresh condition. He also referred to a very unusual feature which had been noticed in the re-pointing of the south wall of the chapter-house —namely, a damp-proof course of clay about a foot above the present level of the ground. A most interesting discovery was a stone effigy of a stone-mason, which had been built into the abbey wall as common rubble, the carved side being turned towards the heart of the wall, and the back of the plain slab exposed to the outside. The mason is robed in gown and hood. His head rests on two pillows, the one lying diagonally above the other. On his right side is a hammer, on his left a square, and his feet rest on a mason's "mell," or mallet.

We do not think that the future will regret that the Doncaster Corporation of to-day have not been permitted by the Local Legislation Committee of the House of Commons to acquire the powers they desired to limit to 30 feet the height of new buildings which were used or intended to be used as a tavern, hotel, restaurant, hospital, boarding-house, common lodging-house, or school, and to provide that in every new building which was used as a shop in which sleeping accommodation was or was intended to be provided proper and reasonable means of escape should be supplied on the storeys on the upper floors.

The Chairman said the Committee were with the promoters in the object it was desired to obtain, but they were a little in difficulty as to the provisions. They thought they would take the wise course if they passed the clause giving 35 feet as the limit of height, not putting anything in as to the number of persons resident on the premises, but relying on the fact that the Corporation was only to require such measures as were reasonably possible, with power to appeal in the improbable event of the clause not being interpreted in the required sense.

WAR ITEMS.

IN connection with the campaign undertaken by the Board of Trade, on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

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Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and lists 10 and 11 of articles which inquirers desire to purchase are now ready and may be obtained by United Kingdom manufacturers and traders.

British firms interested, as suppliers, in any of the goods mentioned should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

R.I.B.A. EXAMINATIONS.

THE designs submitted under Subject XIX. will be on view in the Galleries of the R.I.B.A. on March 22, 23, and 24, between the hours of 10 A.M. and 8 P.M.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

AN interesting comparison of the cathedrals of Amiens and Salisbury—two contemporaneous buildings which are frequently regarded as typical of the Gothic architecture of France and England respectively—was given to the members of the Sheffield Society of Architects and Surveyors last week by Mr. J. R. Wigfull, A.R.I.B.A. Mr. A. F. Watson, F.R.I.B.A., the President, occupied the chair.

The lecturer said it was often claimed that Gothic architecture originated in France, and that England borrowed it; but later investigation seemed to show that there was a separate development in each country. The English might have borrowed from the French to a slight extent, but not in the wholesale manner that had been suggested. With the assistance of a series of slides from his own photographs, Mr. Wigfull took his hearers in detail through the two cathedrals, comparing the buildings externally and internally. They were both commenced in the year 1220, and they are practically the same length, but the width and height of Amiens are very much the greater of the two.

Mr. Wigfull was thanked, on the motion of Mr. J. B. Mitchell-Withers, F.R.I.B.A., seconded by Mr. W. J. Hale, F.R.I.B.A., supported by Mr. Fenton, F.R.I.B.A., and Mr. H. L. Paterson, A.R.I.B.A.

ILLUSTRATIONS.

DESIGN FOR A LARGE COUNTRY HOUSE.

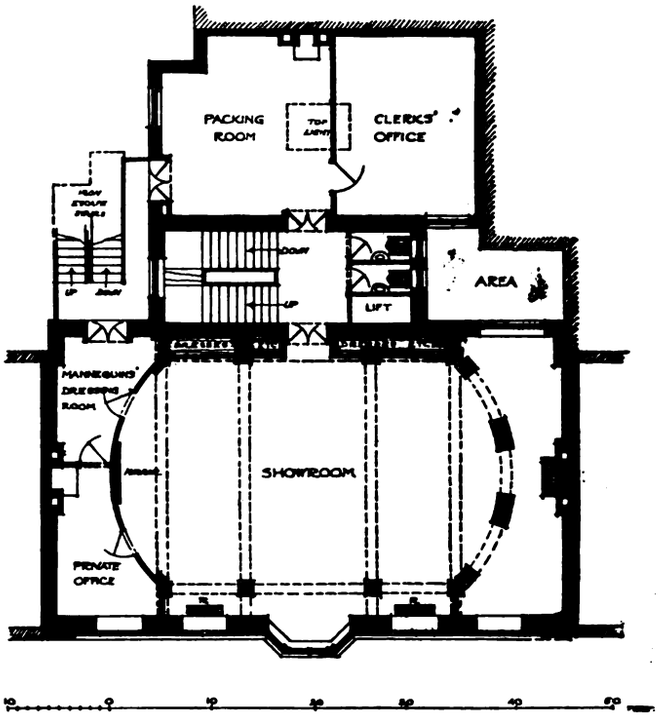
THIS design would be carried out in red brick with stone dressings and tile roof. The motive of the design is the placing of the kitchen wing, garage, &c., and servants' quarters around a large paved entrance court, entrance to this latter being under an archway over which would be placed a private chapel. There would be a large stone terrace on the south side or garden-front of the house as illustrated above.

The design was prepared by Mr. Lionel F. Crane, Licentiate R.I.B.A., and Mr. W. S. Willan.

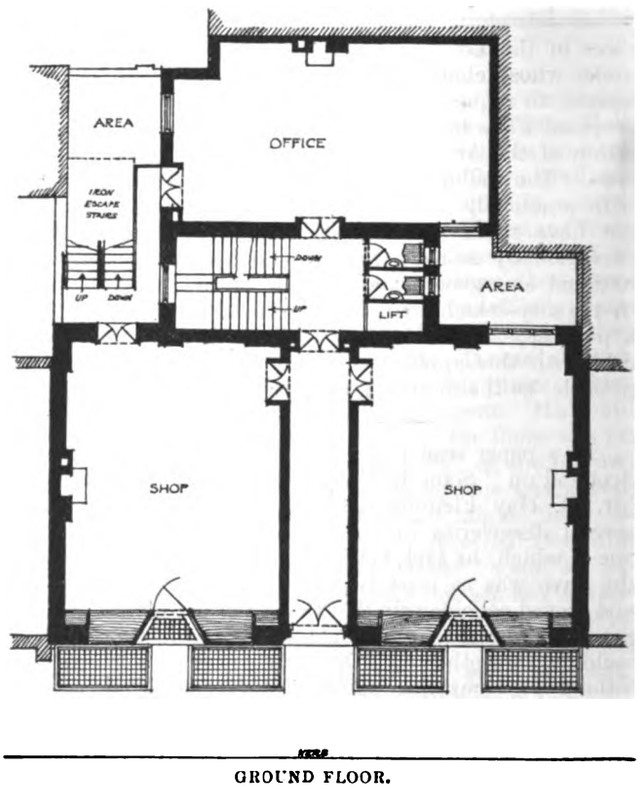
GOLDERBROOK HOUSE, GREAT TITCHFIELD STREET, W.

GOLDERBROOK HOUSE stands on the west side of Great Titchfield Street, near the south end of that thoroughfare and opposite Messrs. Elsleys' premises. It has recently been erected as business premises, the frontage on the ground floor being arranged for shops, the whole of the remaining space designed for workrooms and offices. It therefore comes within the provision of the Factory Act, and is provided with a large number of heavy teak escape doors as required by the L.C.C. The construction throughout is fireproof, the floors and main staircase being of concrete, and the escape staircase in the south area being of iron. The elevation to Great Titchfield Street is faced with Luton bricks, the quoins and window-arches being in red sand-faced bricks. The stonework of this elevation is of Portland stone, and the roof is covered with thick green Westmoreland slates. The top of the mansard is covered with asphalte, as is also the three-storey block in the rear. The front block is six storeys in height, including the basement and the storey in the mansard. The areas are lined with white glazed bricks, and the remaining facings are in picked stocks. The piers carrying the heavy girders are in blue bricks. The shop-fronts and principal entrance-door are in mahogany. The basement rooms at the front are lit by pavement lights over a passage.

On the first floor is a fine show-room, specially fitted and decorated for the firm of dress and blouse manufacturers



FIRST FLOOR.



GROUND FLOOR.

who occupy all the upper part of the building. A circular end was contrived at their wish, and also a private office and a mannequin's room. The bands of foliage in plaster, the wooden Ionic columns, the marble fireplace, the panelling, and all the other decorations of this room were carried out by Mr. P. G. Hopkins, of 68 Newman Street, W.

The general contractor for the main building was Mr. F. G. Minter, of Putney, who also supplied the iron escape staircase and all the joinery, including the shop-fronts. The steel construction was executed by Messrs. A. D. Dawnay & Sons, Ltd., and the hot-water heating system by Messrs. Strode & Co.

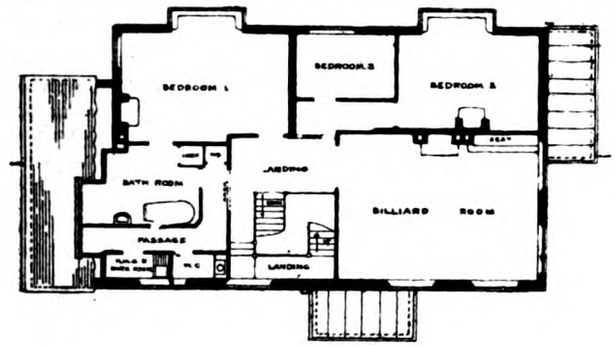
The architect was Mr. Martin Shaw Briggs, A.R.I.B.A.

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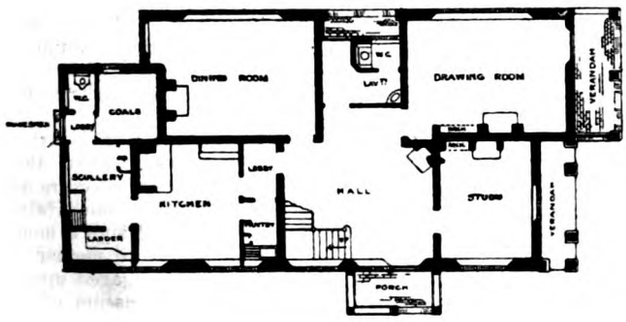
HOUSE AT GUILDFORD.

THIS house is erected on the southern slope of the Hog's Back, upon a chalk subsoil.

The exterior is faced with white rough-cast, the chimneys finished with mottled red facing-bricks from Mr. T. Mitchell's brickworks, Guildford, and the verandah piers are built with Collier's (of Reading) mottled facing-bricks; the roof is also covered with the same firm's antique hand-made sand-faced tiles. The hall floor is of oak, and also the main staircase. There is a central heating system installed, supplied from an interior stove fitted in the



FIRST FLOOR



GROUND FLOOR

dining-room by the Hot Water Stove and Range Company, Guildford.

As only three bedrooms were required on the first floor, a billiard-room was designed on this floor, with coved ceiling of good height.

The builders were Messrs. J. M. Rutter & Co., of Farnham Road, Guildford, from designs prepared by Mr. C. E. Salmon, M.S.A., architect.

THE CHOIR, OXFORD CATHEDRAL.

THIS drawing was made by Mr. Chas. S. Carter during his tour as holder of "The Architect" Travelling Studentship last year.

COMPETITION NEWS.

BROMBOROUGH.—Messrs. Lever Bros., Ltd., invite designs for cottages on their Bromborough (Cheshire) estate from architects in practice only. The cottages to be planned in groups of five to cost not more than £1,000 per group and seven to cost not more than £1,400. The promoters offer nine premiums for the selected designs, to be divided between the classes. Each premium will be at the rate of 2½ per cent. upon the competitor's estimate of the cost of his design for a group, which must not be over either of the foregoing amounts. The premiated designs will become the property of the promoters, who reserve the right to erect the groups by their own staff, either singly or in repetition or not, as they think fit. The promoters have appointed Mr. Geoffry Lucas, F.R.I.B.A., as assessor. Conditions of the competition will be forwarded to intending competitors on application being sent to the Architect, Messrs. Lever Bros., Ltd., Port Sunlight, Cheshire.

THE Edinburgh Architectural Association have received from Mr. Charles Moxon, 77 George Street, the gift of two interesting busts, one of Inigo Jones, and the other of William Burn (the latter made about 1855), which have been placed in their Reading Room.

ROYAL INSTITUTE OF BRITISH ARCHITECTS

AN ordinary general meeting of the Royal Institute was held on Monday, March 15, at Conduit Street. The chair was taken by Mr. J. Alfred Gotch, F.S.A., F.R.I.B.A., Vice-President.

The death was announced of Mr. H. W. Moore, Associate, 1881; Fellow, 1888; retired, 1912.

A paper, of which we give an abstract, was then read by Mr. James Williams, entitled,

ENGLISH CHURCH MONUMENTS.

One of the chief objects in the study of mediæval art is the lesson it conveys in the rise and fall of the great governing principles which influenced its development, to unparalleled excellence on the one hand, and to the neglect of the essential ideals which slowly led to degeneration on the other. To-day, with the natural evolution of thought, the religious outlook has entirely changed from that of the mediæval position; but the more the subject of monumental art is considered, the more one is impressed with the deep religious feeling that pervades the work of the best periods, and this was evidently the basis of inspiration for the consummate beauty and the infinite resources for which the work is justly noted. Another important lesson, amongst many others, which the study of this subject teaches, is the immense value and possibilities of honest craftsmanship, which alone has produced all the various objects that we as a nation most prize; but now with the general use of machinery hand labour has largely died out, the workman has been robbed of his greatest heritage, and the creative powers of a whole nation of workers are asleep.

The history of the English monument may be said to commence with the introduction of Christianity, and it has been stated that by the second century Christians were to be found in almost every part of the Roman Empire. Tertullian, in 208, states that when Severus went to quell the northern tribes of Britain Christianity had found its way there.

The country abounds in good stone and marble. From the earliest times the quarries, their nearest towns, and the great churches have been centres of monumental masons and their works. Throughout the Middle Ages flat tombs, marble and stone effigies, stately monuments, reredoses, saints, and angels were made and kept in stock and distributed throughout the country. In those times, when everything was made by hand, the number of skilled workmen was much larger in proportion than it is to-day. London was perhaps the chief city for all the arts, although every large town was a self-contained centre.

The early effigies are said to have been copied from those made of a dark-coloured marble coming from Tournai. The chief Purbeck effigies were made from about 1150 to 1300, and those of the London school, consisting chiefly of bishops and knights in armour, were much in favour, and were copied in stone throughout the country. Trade fell off in the early part of the fourteenth century when alabaster was introduced and became generally used for the effigy and monument. Purbeck marble, however, continued in use for monumental purposes, apart from the figure, down to the sixteenth century. The shop production of Purbeck marble and stone effigies in the mediæval period was an outcome of the early carving, and it accounts for the number of conventional cross-legged figures which are to be found all over the country and have little connection with the attitude which is supposed to represent a crusader.

Effigies and monuments of stone were produced before as well as concurrently with those made in Purbeck marble and alabaster. Beautiful as the Purbeck effigies are, the marble was worked to its utmost limits. The masons of Wells, before 1200, had made the effigies of their bishops in Doulting stone. Many others came from the same shops, and when the Purbeck industry declined Bristol and Wells, amongst other places, became famous partly through their nearness to quarries of good stone, which always commanded the chief trade, especially in places near the coast. The best period of the freestone effigy is said to have been from 1250 to 1360 (during which time there came an influence on sculpture from France, on the London carvers, and from Germany in the northern school). The appearance of the cushion under the head is supposed to mark the change in the treatment of the effigy from the upright character to the recumbent attitude. The stone effigies of London were generally coated with fine plaster, and

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this, together with the whole monument, was painted in rich colour and relieved with gilding. The mail armour, at first painted on the effigy, was with other details afterwards impressed on the face of the plaster when soft, or was carved. It was not until about 1300 that individual representation appeared in the effigy, and portraiture in the modern sense was seldom attempted until later. It may be noted with reference to the design of the monument that from the twelfth to the fifteenth century the architectural and constructive motive is the key to all the finest work of that period.

As early as the twelfth century alabaster was used for architectural works, as may be seen in the Norman doorway on the west front of Tutbury Church, Staffordshire. The best alabaster came from Chellaston, Derbyshire, though Nottingham, not far off, is said to have been the headquarters of the carvers. London, too, was a great centre of the alabaster trade. The facility with which it could be carved and coloured for monumental purposes and for architectural furnishing naturally led to its extensive use, but the chief part of the trade was in the effigy and tomb.

Oak in the Early and Middle Ages was extensively used for constructional and decorative works, particularly in districts remote from stone quarries, and altar tombs with their effigies and canopies were often made in oak, painted in colours, gilded, or enamelled. Wood effigies, chiefly in oak, have been used, together with freestone, marble, and metal. In some places wood came more readily into use where good timber was obtained in abundance and skilled workmen were available. Although there are about ninety effigies existing, twenty-four of these being of women, and the rest nearly all in military attire, numbers have been destroyed. It is said that the Black Death killed off most of the carvers of effigies, and certainly not many in wood were made after 1350 until the sixteenth century, when the use of wood was for a time revived. Many of them were painted or cased in metal. The finest instance of a wood canopy is that above the tomb of Archbishop Kemp (d. 1454), in Canterbury Cathedral.

The effigy, as well as numerous and important accessories of the monument, was sometimes made in metal, chiefly bronze. It has been said that, as regards effigies in metal, perhaps no church can show a more complete and beautiful series than our own Westminster Abbey, the earliest being those representing Henry III. (d. 1272) and Queen Eleanor. In a few cases silver was employed. Henry III. is said to have caused a figure of his daughter Catherine (d. 1257) to be made in silver, and in the same reign a silver image of the Earl of Gloucester was placed on his tomb in Tewkesbury Abbey.

An interesting feature in connection with the table tomb is the metal hearse, which served the double purpose of protecting the effigy and providing standards for the numerous candles which were lighted on the occasion of various festivals. Instances are the one in iron round the tomb of Lord Marmion in Tanfield Church, Yorkshire, and the brass hearse over the effigy of the Earl of Warwick at Warwick. A fine iron screen surrounds the tomb of the Earl of Arundel, in Arundel Church, with embattled rails and ten buttressed standards with moulded bases and caps with prickets for candles. There is the matchless and well-known iron grille over the tomb of Queen Eleanor at Westminster.

Cast-iron slabs were used for memorials as early as 1500, both in the church and churchyard, near the old ironwork centres. At Burwash, in Sussex, is a long cast-iron slab said to be of the latter part of the fourteenth century, with a small cross on the upper part, and at its base "Orate pro anima."

In the twelfth century the first effigies of knights appear clad throughout in mail armour; in succeeding ages, slowly and naturally, the armour changed with the changing weapons of war, and the sculptured effigy shows this in a marked way, making a continuous historical record. A very brief summary of such a subject is never entirely satisfactory, but armour has been roughly classified as follows: Twelfth century, ring and mail, unmixed with plate; thirteenth century, mixed mail and plate, the mail predominating; fourteenth century, mixed mail and plate, the plate predominating; fifteenth century, era of complete plate. From the end of the fifteenth century armour became more decorative than useful, but it continued to be shown on monuments down to the seventeenth century.

Semi-effigial monuments, of which there are a considerable number all over the country, chiefly of the thirteenth and fourteenth centuries, should be noticed. The figure of the semi-effigy on slabs and brasses is generally associated with a cross. The idea of representing only a portion of the figure may have been a passing phase in monumental art, or may have been due to a desire to provide a constant remembrance of the deceased on the tomb in which the body lay. Some carry a double semi-effigy. Many are placed within mural arches; they are also shown on numerous brasses. Many were done about the period of the Black Death, some of a rude character, like the work of unskilled carvers. Some of the most noted examples are Princess Joanna (d. 1240), wife of Llewellyn Prince of Wales, at Margem, Bishop Ethelmar de Valence in Winchester Cathedral (1260), Sir William de Staunton (d. 1326) at Staunton, Nottinghamshire, and Sir John Daubygne (d. 1364) at Norton Brize, Oxfordshire.

The tombs of the saints and of the great nobles made an important feature in the church, and upon them was expended some of the choicest work in design and decoration; from base to pinnacle every part of the tomb was painted in glowing hues and gilded. Jewels often decorated the crowns, mitres, pastoral crooks, belts, sword-hilts, and scabbards, as well as the dress. Beautiful patterns in endless designs ran along borders and bands, square or diagonal diapering covered the broad surfaces, gilding and burnished gold were freely used on the salient points and mouldings. Quatrefoil and trefoil ornament was frequently employed, and dark-painted tracery in the sunk panels and other parts, as well as glass mosaic. The backs of some niches have patterns in gold, like those on the old velvets and brocades; the vaulting of the canopies and the ceilings of the wood testers often had painted subjects on a gold or blue ground studded with stars; sometimes they were decorated with delicate scrolls of vine or other leafage. Some monuments had more gold than colour. Enamelled or painted heraldic shields were used on the table tombs as well as on the cornice and other parts of the monument.

By the middle of the sixteenth century Gothic art in England had reached its final development, when there gradually arose an entirely new outlook in architecture and the other arts. In 1512 Torregiano, the famous Italian artist, was commissioned by Henry VIII. to design a monument for the Countess of Richmond, the mother of Henry VII. Before this Torregiano was engaged upon a monument of Doctor Young (now in the museum of the Record Office), with the object of satisfying Henry VIII. before being entrusted with the more important tomb of the Countess, and that of his father and mother. The terra-cotta tomb of Doctor Young, with its fine effigy, is entirely after the Italian manner. In that of the Countess of Richmond, though the sides of the tomb are Italian in their treatment, the canopy surrounding the head and its supports on each side of the figure are of Gothic design. Then followed the great monument of Henry VII. and his Queen by Torregiano, more strictly in the Italian style, but here the great bronze screen which protects the tomb is purely Gothic in character. Numbers of workmen were attracted to this country through the encouragement given them by Henry VIII. and his Court. After the death of Henry VIII. most of the Italian workmen left the country, and their special art soon died out.

Gradually, however, the transition from Gothic to Classic architecture proceeded. Both the Dutch and Italian influence played a great part in the production of many monuments of Classic character in the seventeenth century. Eventually, chiefly through the works of Inigo Jones, and those of Christopher Wren, John Webb, Hawksmoor, Vanbrugh and James Webb, Roman architecture was fully introduced into this country. Most of the architects designed sepulchral monuments or worked in conjunction with sculptors and monumental masons.

An enormous number of Classic monuments, of widely different merit, have been put up, all more or less interesting from the human as well as the architectural point of view.

Monumental sculpture, however, became strangely altered from its original purpose, and fell from its high estate. In the best periods of Gothic art the carved effigy was treated conventionally, as an important accessory to the design of the monument. To attempt an actual copy in sculpture of a deceased person was never intended, the limitations in the use of all materials were freely acknowledged, and the desire was to give an ideal representation of the figure, in an architectural setting, and as part of a monumental scheme. This simple and beautiful unity of purpose which distinguished the best work of the thirteenth century gradually gave place in monumental art to an expression of the pride of life, when the dignity and grandeur of office and position was ostentatiously displayed. Originally most

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of the sculptured effigies were represented peacefully lying with folded hands, as if in prayer; in later times the attitude materially changed, the figure is shown restlessly reclining with the head supported upon the right hand and arm, some, as if very uneasy, are sitting up wide awake, others eventually appear standing upright, gaily attired, and looking round on the world again.

With reference to the monuments which are being put up in our churches, more especially in Westminster Abbey and in the cathedrals, it is high time some strong protest were made. If a memorial must be erected "inside" the church, a small tablet should, in most cases, answer the purpose. The churchyard, however, offers the least objectionable alternative; but here the monotonous display of hundreds of white crosses and tombstones all of the same type shows to what depths the public taste has sunk. In the case of Westminster Abbey, crowded as it is with tombs, it is a disgrace that more are being allowed to be put up. Various reasonable suggestions have been made to meet the requirements for monuments, when of a national character, and these ought to receive the immediate attention of the responsible authorities. The old cathedrals and churches are too precious to be further invaded and disturbed by any modern productions. An exception, perhaps, may be claimed, with reluctance, for such a masterly work as the beautiful monument by Alfred Stevens, one of the greatest sculptors and painters of modern times, put up to the Duke of Wellington in St. Paul's Cathedral. It worthily illustrates the best traditions of both Classic architecture and sculpture, and may be compared with the works of the most noted Italian artists.

DISCUSSION.

Mr. Arthur Keen, in proposing a vote of thanks, said that a few years ago Mr. Williams gave at the Architectural Association an address on George Devey, which was intensely interesting and valuable. The church monuments which he had just been showing in such variety were the very cream of their various periods. Speaking in a general way, it had struck him, while looking at the beautiful illustrations, that they showed admirably the infinite possibility of design in Gothic detail. There was no feeling of conscious striving for originality, and yet the amount of variety was amazing. He would not prophecy that the next revival is going to be Gothic; but Gothic could certainly adapt itself to modern requirements more easily than some of the Classic work one is accustomed to at the present moment. The slides also served to refute what used to be a standing criticism of decorative Gothic detail—viz. that it was applied falsely. That charge may have been justified in part—especially as to woodwork. But though they had just seen buttresses, pinnacles, &c., used in a purely decorative sense on monuments, yet it appeared in all cases that they had been employed with such wonderful judgment and such a sense of right feeling that the criticism must fall to the ground. There was always some distinction to express the fact that these features were used in a purely decorative sense, and not in a constructional way. Many of the finest qualities in the monuments were doubtless due to the fact that the men designing them were the men making them—a capacity almost lost at the present day, though it still lingers in the trade of the ship's carpenter. He believed that a great deal of benefit might result from teaching craftsmen a good deal about architectural detail and then leaving them a very much freer hand in the actual production than they are accustomed to. The distinguishing characteristic of the mediæval craftsmen was their great truthfulness: in every case mediæval sculpture represents what was at that time—hence its historical value. That quality has been lost now.

Mr. Lawrence Weaver thought it was very desirable at the present time for people to have light and leading as to the best sort of church monuments to put up. At the end of the war there would not, perhaps, be many tombs erected, because there was not the room, and in most cases the bodies would be buried in Flanders. So they would be chiefly mural memorials. It would be very interesting to establish when the wall tablet was introduced into this country; it was probably a development of the semi-effigial tomb slab. One of the earliest was the Bakewell example, dating from about 1380-82. It would also be interesting to know when the first kneeling figures came into England—he was inclined to think they came from Tournai. It was regrettable that more attention had not been paid to the later memorials; some of those even of the eighteenth century were extraordinarily fine. He would like to enter a mild protest against Mr. Williams' disapproval of standing figures. Some of the earliest memorials we know are the Greek stelæ, and these show the departed standing as in life. Providing the representation was not executed with too much vigour, it was difficult to see why this should not be done.

Mr. A. T. Bolton remarked that if the interior of a church was worth anything it would rise far above the monuments. English churches had suffered enormously by the pulling down of many valuable monuments. All sorts of expedients had been resorted to in order to effect this. In his opinion architects had not the slightest right to interfere with history as represented by these memorials. The facts contained on them were of vast interest to their cousins in America, Australia, and elsewhere.

The vote of thanks was carried by acclamation. Mr. James Williams having briefly replied, the meeting then terminated.

THE LAW AS TO THE REMUNERATION OF THE ARCHITECT.

AT a meeting of the Society of Architects held on Thursday, the 11th inst., at 28 Bedford Square, W.C., a paper on the above subject was read by Mr. A. Montefiore Brice, Barrister-at-Law. A report of it appeared in our issue of last week (p. 230). Mr. Brice, by way of introduction, explained that absence from town on military duty had prevented him from dealing with all the ramifications of this big subject.

Mr. S. T. T. James, in proposing a vote of thanks, remarked that a more concise paper had probably never been read in that room. It embraced all the fundamental principles relating to the payment of an architect. The whole gist of the question lay in the one word "contract." The great difficulty which architects find themselves in in respect of their fees so frequently rises from the lack of that contract. It is possible to contract for anything in this world, and provided that it is a reasonable contract, and that each party knows what it means, it can be enforced in any court of law. Let each party know where they stand and where they are going to end. Personally he was not fond of hearing of an "implied contract," for that means a lawsuit generally, just as "custom" means ruin, for it becomes so very difficult to prove custom, and it means the calling in of professional witnesses. He would very much like to have heard the lecturer's opinion as to whose property the plans are after a building has been completed. Are they not the property of the person who pays for them, and not the architect? He would also like some light thrown upon the question of the use that may be made of those plans after they have passed out of the architect's possession. Was an owner allowed to make use of them in the erection of further houses afterwards?

Mr. T. Martin said Mr. Brice had given them a good deal of interesting and useful information. But perhaps they would be going beyond the mark in asking him to add to the legal points. Especially useful was the advice to have the contract written and not implied. The word "contract" had a wider meaning and a greater significance for architects than is suggested in the paper. The major part of their troubles is caused by the existence of a very unsatisfactory Form of Contract under which work has to be carried out. Of all the things that land the architect into trouble most frequently it was the misunderstandings arising out of this Form of Building Contract. One point which struck him was a little remark which indicated the kind of mind or temperament with which the Courts regard architects, and this was that judges refer to architects as surveyors. There appears to be a dead set against the architect, no matter what Court one may go to. His belief was that that had arisen out of the unfortunate Form of Contract which the Royal Institute had palmed off on the public some years ago. That Form wanted altering, and he understood the Society of Architects were engaged in doing it. Contract or no contract, it seemed the position of the architect with regard to his fees was getting into a very unsatisfactory condition. He himself had heard in the High Courts a judge instruct a jury that they were not to take any notice with regard to the custom of paying at the rate of 5 per cent., but they were to use their own discretion with regard to the remuneration in that particular case. Probably not a single one of those twelve jurymen had ever employed an architect in his life, or was qualified to understand the position. In the County Courts a judge will use very strong expres-

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sions as to the decisions arrived at by surveyors. In Police Courts there was the same feeling of hostility from top to bottom. Did they not think it time some special Court should be appointed to deal with all these technical cases? There was evidently a dead set against the architect when he came before the Court. The sooner architects' fees were regularised and put into order the better. Solicitors have two scales on which they can work. Architects would be satisfied with two or three dozen items of charges, though solicitors can charge for two or three hundred different items. Mr. Brice's paper had been very well thought out, and the facts put in a lucid way. There was "something rotten in the state of Denmark" with regard to architects' fees. Concerted action seemed to be called for between the Society of Architects, the Royal Institute of British Architects, and other architectural societies to get this question of fees regularised.

Mr. Ellis Marsland congratulated Mr. Brice on the clear way in which he had delivered his lecture—a quality not shared by every one of his predecessors. The paper itself was also very clear and precise, so that he who ran could read. Its burden was for the architect to get everything settled before starting. Mr. Brice had shown how uncertain the law is on the subject, and how difficult it is to recover when the architect has not a written contract. He had likewise shown that Registration would settle the question of the remuneration of an architect and put it on a more satisfactory basis than it is at the present time.

Mr. H. H. Salisbury questioned whether it was always wise to suggest to the client in the very commencement of the proceedings that there will be a 5 per cent. addition for fees to the cost of the contract, lest he should thereby be frightened. In actual practice he believed extra works must be always implied contracts. The lecturer emphasised all the way through that where there is an implied contract the architect is entitled to remuneration for what he has done.

Mr. E. C. P. Monson (President) considered the paper had been a most instructive one. Of course the remuneration of an architect was a very difficult subject. The scale of the R.I.B.A. was not taken by the Court of Chancery, which had its own scale upon which they make payment. The Royal Institute now proposed a new scale, beginning at 10 per cent. for jobs up to £1,200. Every architect knew that 5 per cent. on a small job did not pay. From the point of view of remuneration alone it was most important that a scheme of Registration should come as early as possible. At present everything controversial had to be made quiet. But he looked forward to the time when Registration will be an accomplished fact.

The vote of thanks was then passed by acclamation.

Mr. Montefiore Brice, in discussing some of the points raised, said that one or two of the speakers had manifested hostility towards implied contracts: but there never has been a contract written which did not contain an implied contract. It was indeed almost impossible to get away from implied contracts. When a man bought plans from an architect it was for the architect to impose any conditions he may like. In making a plan he creates no copyright. The plans and drawings are the property of the employer; this applies not only to the finished product, but also to the rough drafts, &c. But there was nothing to prevent an architect from using similar drawings for another job. The simplest basis of reform as to the remuneration of an architect would be a statutory schedule of charges—and that would come within their grasp if they had Registration. Personally he recommended an agreement as to payment in two or three lump sums in preference to any scale of charges. The apparently dead set against architects in this country was due to the standpoint of the judges, who said that here was a layman knowing nothing about the matter who had to be protected against the skilled technical man. The judge always takes up the cudgels for the layman, although, in reality, the latter was very often an oily, wily knave.

THE Council of the Royal Institute of the Architects of Ireland have nominated Mr. W. H. Goodyear, M.A., of Brooklyn, U.S.A., to be an honorary Fellow of that body.

HER MAJESTY THE QUEEN and Princess Mary visited the Ryder Galleries, 44 Conduit Street, W., to view the three schemes for room decoration (the blue and silver, black and white, and Egyptian) by Mr. H. Kemp Prossor, and also a collection of fans.

FLEMISH CIVIC BUILDINGS.*

By Mr. W. H. ANSELL, A.R.I.B.A., A.R.E.

THE world-shaking events of the last six months have caused the eyes of all civilised peoples to be turned to an unwonted degree on the Flemish civic buildings.

It has been difficult to speak of them impartially or dispassionately. Our daily press and our architectural journals have discussed the merits and the failings of these monuments of a past age.

A natural indignation has perhaps led the average newspaper contributor to place them all, indiscriminately, on too high a plane, while on the other hand the architectural writers have been unable to free themselves entirely from certain current preferences. One of these writers implores us to look nearer home and realise that in the pulling down and re-building of Regent Street we are losing an architectural treasure of greater value than anything at Louvain.

In appraising architecture it has become almost a fashion to set up standards—the highly-developed constructive system of the Gothic cathedral, or the proportion and details of the great Italian masters of the Renaissance, and judge architecture by them.

My own view is that to obtain the greatest benefit and pleasure from the study of architecture it must be considered as the expression in stone and brick of the current life and art of the people.

This surely should be our test of value. Architecture, of all the arts, is a dull thing when proved only by rule of scholarship or pedantry.

I propose, therefore, to discuss from such historical knowledge as is available the general life and character of the Belgian people, and then, by an examination of their buildings, to show that their architecture was in full sympathy with this character—was, indeed, the result of it.

I must first remind you of some of the political and social vicissitudes through which this distressful country has passed.

Modern Belgium has nine provinces, of which five are Flemish. South Brabant, in which Brussels and Louvain are situated, East Flanders with Ghent, West Flanders with Bruges, Antwerp, and Limburg. The remaining four provinces, Hainault, Liege, Namur and Luxemburg, are Walloon.

The bi-lingual character of Belgium must not be forgotten.

On the north and west are the Flemings, on the south and east the Walloons.

The Flemings are of Teutonic stock, the Walloons a Celtic people speaking a form of French.

This, however, is not a patois or corruption of modern French; it comes in a direct line from the old tongue of Gaul. These are the people of the hills, the Flemings are men of the plain and the dunes.

I need not take you back to the time of Cæsar nor to the Frankish occupation and the feuds of Fredegonda and Brunhilda in the sixth century. These played their part in the building up of the people, but it was in the time of Charlemagne and his successors that the country approximating to the modern Belgium was made a unit in the Holy Roman Empire.

Charles, Lothair, and Louis, the grandsons of Charlemagne, divided the Empire; the one retained Germany, the other ruled over Gaul, and Lothair, the third, took Lothairia, which ran from Italy to the North Sea, forming an intermediate State between Germany and France. It was this State that developed into Belgium as we know it to-day.

There was, however, no national unity at this period nor for many centuries after, but round the castles of these feudal kings and their lords the towns began to have their separate life as civic communities.

Bruges, Brussels, Ghent, Courtrai, Ypres, now assumed definite local characteristics.

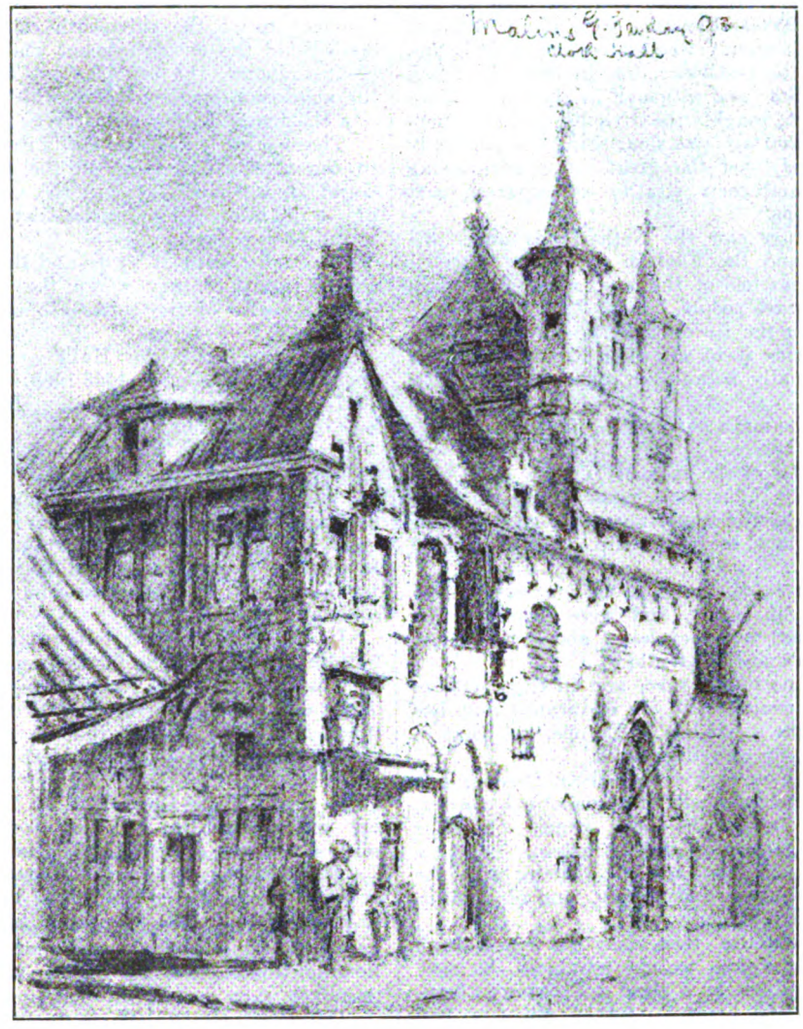
There was jealousy and rivalry between them even in this early period of their existence, particularly over the acquisition of relics and the consequent pilgrimages.

The feudal system, notably under the Baldwins, was not always a tyrannous and repressive system enslaving and crushing the people. Some of these lords were wise enough to see that an industrious and rich people might be a source of power to themselves.

They therefore encouraged industry, established markets, influenced the great continental trade routes, and so did

* A Paper read at Carpenters' Hall.

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AT MALINES.—From a Sketch by Mr. HUON A. MATEAR, F.R.I.B.A.

something to create a civic spirit in the community under their control.

The principal trade or industry at this time, and for centuries after, was that of cloth-making and dealing.

After the year 1000 various towns became definitely known as cloth towns; they obtained their wool from England, and made a cloth which bore a high reputation and was sent over the whole of Europe.

The Flemings thus increasedly became traders and shipmen, and it is said they supplied the ships and the sailors for the bringing over of William the Conqueror and his army to England, for which act we may assure modern Belgians that any resentment we may have felt at the time has long since vanished.

With the increase of wealth and influence came the union of workman and trader in guild and fraternity, and the insistence on civic rights and freedom.

The feudal lord could watch the growth of the town about his castle with equanimity so long as it did not interfere with his own power; but when clamorous townsmen began to demand charters of freedom and to refuse payment of taxes a conflict was inevitable.

One of the earliest of these was at Cassel in 1071, when Flemish burghers met the French knights and defeated them.

From that time up to the final breaking up of the feudal system there were frequent collisions between the townsmen and the knights.

At Bruges in 1301 and 1302, the people, under Pieter de Coninck, a weaver, rose up against the French King's tyrannical measures, and in May 1302 massacred the French garrison. It is interesting to learn that the Flemings employed the old Shibboleth test to distinguish friend from foe, for every man was made to pronounce the words "Shield and friend"—"Schilt ende vriende"—and everyone who pronounced it badly was immediately slain.

The dispute was concerned with the interference of the French with the importation of English wool, and the consequent injury to the prosperity of the Flemish towns.

A punitive expedition was at once sent out by the French, and the well-known battle of the Spurs took place at Courtrai.

25,000 Flemish weavers from Bruges, Ghent and Ypres met and defeated the very flower of French chivalry, and 700 golden spurs, hung in the Church of Notre-Dame at Courtrai, attested the thoroughness of the victory.

At Ypres, Liege, and Louvain there were similar risings; the spirit of the burghers would not be denied, and one after another the charters of liberty were wrested from the unwilling hands of counts and barons.

Had the cities themselves been united at this time they might have formed a strong national nucleus; but they were so permeated with narrow local patriotism, and the commercial rivalry between them was so great, that they hated one another almost as much as they hated the French. We have to admit that they were a turbulent and quarrelsome folk. In the piping times of peace there were 1,200 murders in Ghent in one year, and even then some ardent souls resented the interference with the liberty of the individual when the Church forbade that this number should be increased between Good Friday and Easter Tuesday.

It was about this time that the great cities of Flanders were at the height of their prosperity.

Ghent was five times as large as London. When London had 50,000 inhabitants Ghent had a quarter of a million, with 50,000 craftsmen enrolled in Guild. Ypres had a population of 200,000; Bruges and Courtrai 100,000 each.

But though they prospered and grew strong, they were not suffered to enjoy their hard-won freedom without fighting.

The end of the fourteenth century brought disaster. Louvain for three years was at war with King Wencelas, and was so devastated that large numbers of weavers came over to England and practised their craft here.

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At Roosebeke in 1382 the French and the Flemish met again and this time 25,000 Flemings were slain, and the rule of the duchy of Burgundy was imposed upon Belgium. After the battle came the pestilence, for, in 1384, the Black Death scourged the cities; and although in the Burgundian epoch from 1384 to 1476, roughly the fifteenth century, there was great splendour, and art was flourishing (particularly under Philip the Good), yet the great cities were losing some of their glory and their vitality as separate and independent corporations.

The sixteenth century saw the Netherlands under the dominion of Spain, and the Flemish fight for freedom against Philip II. forms one of the most stirring chapters in the history of this brave people.

I need not dwell on the Revolutionary, the Napoleonic, nor later periods; suffice it to say that it was not until 1830 that Belgium finally became an independent and a free nation.

Such, briefly, are the main outstanding facts of Flemish history.

What of the character of the people?

They were amazingly industrious, conscientious in their work, and keenly alive to the importance of a good reputation for honest and capable craftsmanship. They were good and keen business men.

As individuals and as communities they were intensely jealous of the success of others, and were therefore turbulent and quarrelsome; but they were, above all things, loyal to their own town and their Guild.

They could endure no man's yoke, and in their passion for freedom showed a courage and an endurance that has had lasting effects on the social life of Europe, and that in these latter days has in no way diminished.

These two things, then, they loved—their freedom and their commerce. Any infringement of a communal charter, the imposition of the tax of the tenth penny on their industry, roused the Flemings to instant action.

They were good trencher-men and could drink with the best, rather given to ostentation and display, and of a cheerful if somewhat primitive humour.

What kind of architecture, then, may we expect from such men as these? It would, we are convinced, be free. It would not be characterised by a blind and pedantic devotion to Palladian rule and precept. Better, you say, had it been so. Better, perhaps, as models for copying. But we are not examining Flemish architecture for that purpose. Flemish building was the result of Flemish character. It was a sincere and frank expression of the life of its time, and for my own part I would not give up one over-abundant crocket on its too highly carved façades, one curve of its fantastic and illogical dormer gables.

Those who would assign blame to Flemish architecture for being what it is are, consciously or unconsciously, blaming the Flemings for being what they were, a somewhat futile proceeding. Had they been different their architecture would have been different. Being a true and sincere art, their architecture illustrates their virtues as well as their weaknesses.

They were, of course, in the great European architectural movements. In the Carlovingian and the earlier feudal times they built their Romanesque with all other lands. In the thirteenth, fourteenth, and fifteenth centuries the rise and fall of the Gothic spirit was exemplified in Flanders as in every other country in Europe; when the tide of the Renaissance swept from Italy, it did not leave Flanders untouched.

But the Flemish Gothic was not as the French or the English, the Flemish Renaissance architecture was not as the Italian nor as the French. In fact, it has been somewhat unkindly said that it was like nothing else on earth; but that, I think, refers rather more to the extravagance of some Dutch examples of Renaissance buildings.

The architecture of such a people will be impatient of restraint, redundant perhaps in its ornament, but it will, above all things, possess vitality and strength, and will show in its construction an able and efficient craftsmanship.

It was to be expected, then, that the local patriotism of the Flemings would express itself in fine civic buildings, each city endeavouring to outstrip its neighbour in the splendour of its Halls or its Guild Houses.

The architecture of Belgium seems to fall naturally into two periods—the period of striving, the period of prosperity.

To the first belong the Belfries and the Cloth Halls; to the second the Hotels de Ville and the houses of the Guilds.

The earlier communal buildings in Flanders were the commercial and the defensive. The Cloth Halls and the belfries are of the thirteenth century. The halls were needed for the encouragement and consolidation of their great industry, the belfries were the watch-towers against the aggression or the rivalry which would wrest from the city the fruits of that industry.

The magnificent Town Halls came later, many of them in the fifteenth century, in the Burgundian period; the Guild Houses, like those in the Grand Place at Brussels, are still later, belonging as they do to the end of the seventeenth century.

The Cloth Halls of Ypres and Bruges, with their belfries, are thirteenth-century work; the belfries of Ghent and Alost are also of the thirteenth century, altered in later years.

The principal Town Halls are Bruges 1377, Brussels about 1450, Louvain 1448-1463, Audenarde as late as 1527-1530, while the Renaissance Hotel de Ville at Antwerp was built from 1561-1565.

It is significant that the earlier commercial communal buildings are less exuberant, and, in consequence, are finer as works of art than the later and more elaborately decorated Hotels de Ville. The finest of them all is the Cloth Hall at Ypres. Here the weavers brought their manufactures to be checked, stored or sold. The hall was built for them, and took close upon a hundred years before it was completed in 1304.

It was built by their fellow townsmen—the men of the building guilds working for their comrades the weavers, and just as in Florence the wool-dressers guild, the Arte delle lana, was most powerful of City Guilds, so in Ypres the producers of the wealth, the weavers and cloth men, were the paymasters, and the builders remained a subordinate guild.

To my mind the Cloth Hall at Ypres should rank among the great buildings of the world. Without assigning relative degrees of merit, the Cloth Hall at Ypres is to the Flemish what the Parthenon was to the Ancient Greeks, or Santa Sophia to the children of Byzantium, an expression in building of the finest spirit of its age.

Its design is easily grasped, and this simplicity of its dominant motive is one of the secrets of its power and its repose.

The lower storey has open entrances with shouldered lintols; above, there is a range of rather low-traceried windows, and then comes the principal storey in the composition with windows lighting the great hall. The parapet is enriched, and the roof runs from end to end, broken only by the belfry in the centre. The alternate windows of the upper series are not glazed, but form niches for statues, and this adds rhythm and interest to the whole design.

The belfry is a splendid and strong tower, standing four-square to the winds of heaven; they were no weaklings who designed and built such a tower. Its lines continue down to the ground, but the lower portion carries along the main design of the hall.

The proportions of the upper part, the little blind arcade, the range of tall, graceful windows, the clock stage, the four octagonal turrets, and the sturdy spire are—or were—perfect.

Architects to-day sometimes complain of the lack of inspiration in modern commercial or manufacturing buildings.

Here is a purely commercial purpose to be provided for, and yet, how it inspired the men who built it.

The Cloth Hall at Ypres, as M. Emile Cammaerts says, was by far the most striking expression of the communal spirit of independence which Belgium possessed.

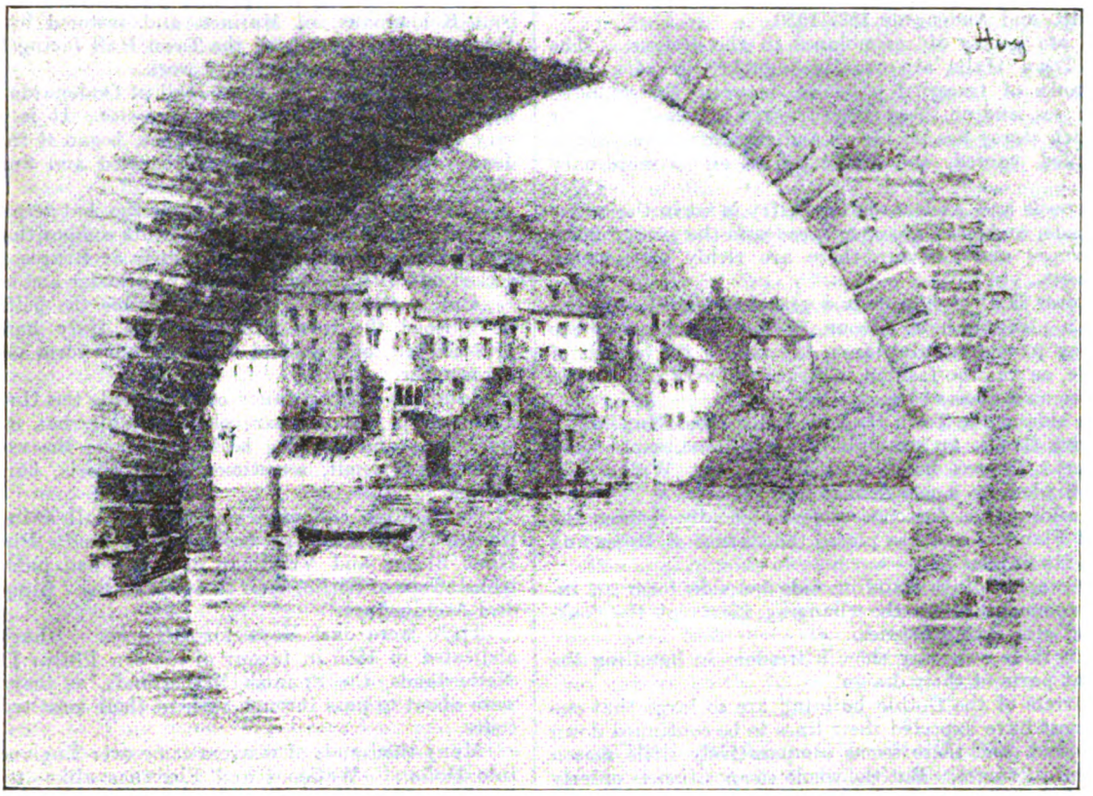
The little building at the side is the Nieuwerk, which was built in the seventeenth century by Jean Sporeman of Ghent.

The relative sizes of the Town Hall of the seventeenth and the Cloth Hall of the thirteenth centuries are a symbol of the history of Ypres.

Ypres, which once held 200,000 citizens, was inhabited in 1914 by some 18,000 or so only, and it is to some extent due to her rapid decline that we in the twentieth century have been able to see the magnificent communal building of 600 years ago. There have been no alterations, no restorations, other than those necessary as repairs.

On the other side of the Square is the Butchers' Hall—a little brother of the Great Hall. Its lower stories are practically a replica of those of the Cloth Hall, and are built of the same stone. They are of the same period—the

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AT HUY.—From a Sketch by Mr. HUON A. MATEAR, F.R.I.B.A

thirteenth century. The upper stories are of brick of the fifteenth or sixteenth century.

The Cloth Hall of Bruges was also a thirteenth-century work, together with the belfry. In the heyday of its prosperity the weavers of Bruges filled the streets like a flood when going and returning from their work. Their city—the capital of West Flanders—was famous and wealthy; it was a trading centre of the Hanseatic League, and the city most favoured by the Italian bankers. It, too, built its Cloth Hall and its belfry.

Many an old town, not only in Flanders, possesses some notable feature which dominates to an enormous extent the soul of the place and the life of its citizens.

It is not always a physical domination—a spiritual one, rather, in many instances. It may be a product of Nature, a river or a great rock; it may be the work of man, a cathedral, a castle, a bridge, or even a market cross.

But whatever it may be, its power is the result of the fact that it has for centuries formed a pivot round which the life of the city has revolved. It has been associated with the joys and sorrows of the citizens, has seen their triumphs and their tribulation, has indeed become a part of the civic life.

In many Flemish cities this proud position is held by the belfry.

Here, in England, our older towers are as a rule a part of our churches. In Flanders many of the belfries were isolated or were connected with the civic buildings, with the markets or Cloth Halls at Ypres and Bruges, with the Town Halls at Brussels and Oudenarde.

There was a local "amour du clocher" deeply rooted in the hearts of the townspeople. Their belfry was much more to them than a more or less (usually less) academic architectural composition.

It was their safeguard—their watch-tower. From its parapets keen eyes searched the surrounding country for the first signs of the advancing foe, in its chambers were stored the communal charters, from its upper louvres rang out the sound of the bells, the call for rejoicing, for assembly, for deadly strife.

Roland, the great bell of Ghent, was more than a bell; he was the very incarnation of the spirit of civic liberty, and when an overlord had crushed the turbulent burghers into a sullen submission, he could wound their pride in no more poignant fashion than by the decree that Roland should be sentenced to perpetual silence. Roland was recast into forty-four small bells, 1661.

To Bruges, then, the loss of her belfry would mean far more than words can describe. Its sturdy, somewhat clumsy proportions are to most of us a familiar and friendly remembrance.

Its lower stories were built after a fire had destroyed the earlier belfry in 1280. The wings of the building were re-built in the fourteenth century, and the tall octagonal lantern was added towards the close of the fifteenth century. There was formerly a spire or fleche on the top of this, but it was destroyed in 1741 and was never replaced.

Three of the lesser known civic belfries are those of Courtrai, a square tower of brick and stone, standing free in the Grande Place. It has somewhat Germanic slated angle turrets and a slated spire.

The belfry of Lierre, some eight or nine miles out of Antwerp, is curiously similar to the last in detail, but of very different and more elongated proportions.

At Furnes is a belfry at the back of the Palais de Justice, with a spire of the early seventeenth century. The lower stages are Gothic, an octagonal lantern set upon a square tower; but the picturesque spire has curiously dominated the whole, so that the main effect is that of a Renaissance tower.

Of the civic buildings of Flanders the cluster of Town Halls of the Burgundian period form a perfect coruscation of late Gothic art.

But though they are rightly classed among the chief glories of Belgium, there is not one which can be placed on so high a level as the commercial building of Ypres.

It was a period of magnificence, art was flourishing, there was bravery of costume and of social life. Painting, music, and literature were at their zenith, and yet it was the beginning of the decline.

Rivers were silting up and, trade being diverted, many thousands of weavers had fled to other lands rather than accept a restricted liberty in their own.

To the men of the age it may have appeared that the land had never been so prosperous, and the idea of decline would be far from their thoughts. But a nation cannot live by art alone. The finest art is that which permeates the life of its time, but the vital force must come from Life to Art.

The artist may despise the man of commerce and all his activities, and yet be himself the result of, and dependent upon, those very activities for the force which impels him to do his own work.

The most famous of the Gothic Hotels de Ville are those

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of Bruges, begun in 1377, Louvain 1448-1463, Brussels 1455, Ghent 1518, and Audenarde 1527-1530.

There are points of resemblance in the designs. The Flemish Town Halls are usually unbroken façades with serried ranks of traceried windows, between the windows are buttresses, and on these the craftsmen lavished all their skill. Each storey has its niches and its statue; the niches are canopied, carved, and crocketted to an extraordinary degree.

At Brussels and Audenarde the belfry is set in the centre of the façade, and there are open arcades on the ground floor.

At Bruges and Louvain there are richly ornamented angle turrets.

The Town Hall of Bruges is a graceful, dignified building with a pleasant local flavour, in that the windows are set in long panels running from the top to the bottom of the façade, as was the fashion in Bruges. There is a central turret here as well as at the angles.

At the side of the Town Hall is the little building known as L'Ancien Greffe, an example of early Renaissance work in Belgium. It was built in 1535 by Jean Wallot and Chretien Sixdeniers, a master mason of the city.

The building has for once somewhat boldly ignored the Counts of Flanders and has placed the statues of Moses and Aaron as its finials.

These two buildings standing side by side form an interesting commentary on the changing ideals of the fourteenth and sixteenth centuries.

Both in their own way show a freedom in handling the constituent parts of their design.

The turrets of the Gothic building are so large that one might almost have expected their lines to be continued down to the ground, and there seems comparatively little reason for the central turret. But the whole composition is orderly and dignified. The tracery in the window heads is, though varied in pattern, built up on sound constructional forms. It does not emulate shapes more suited to the intricacies of lace design than of stone. It has not the austerity of Ypres, but this was a less austere age.

The old Law Courts are of an architectural school generally supposed to be fettered by rule and precept.

But if the rule and the precept (come hot-foot from Italy) did not agree with the personal preferences of the Flemish builder, he abated not one jot of those preferences, he ignored or altered the rule; and therein lies the value of his work to present-day students of architecture.

These curved gables certainly disregard most of the laws and the precepts. But the architectural shortcomings are essentially human, and so are interesting to all who are students of life as well as of art.

Louvain Town Hall is something of a tour-de-force even among Flemish buildings. It was built by Mathieu de Layens in 1447-1459. We are told that his scheme was deemed to be more ambitious than practical; that it could not, in fact, be built.

The plans were submitted to the royal architect for his decision. He approved and Louvain received its Hotel de Ville.

Its main lines are simple and easily comprehended, and its proportions are not unpleasant. Its chief beauty, however, lies in its sculpture and its carved ornament.

There are three tiers of niches and statues. On the lowest stage are the Louvain burghers, above them come warriors and statesmen, with the Dukes of Burgundy and Counts of Flanders on the highest tier—a dutiful and significant acknowledgment of the differences of the social ladder, or if you choose, another interpretation; a hint that while the Dukes and Counts had their uses, it was the burghers of Louvain who were the really important people and entitled to be placed in the niches most easily to be seen.

The galleries round the angle turrets give a curiously bizarre, almost Eastern effect to the building.

The Hotel de Ville at Brussels is one of the famous buildings in the Grande Place. Jacob van Thienen was its first architect and Jan van Ruysbroeck completed its tower in 1455.

The belfry is a slender and graceful structure, a little weak perhaps in the angle pinnacles at the base of the tower. The wings are not identical in design, though they were built at a very close interval. There is the usual crenellated and enriched parapet, and the steep roof dotted with dormers. On the left of the tower the windows are rectangular, while on the right there are cusped and traceried heads.

Ghent Town Hall was built in 1518 by Dominique de Waghemakere, of Antwerp, and the famous architect Rombout Keldermans, of Malines, and restored by Viollet-le-Duc. The east façade of the Town Hall facing the Market Place is a seventeenth-century work.

The delightful little Town Hall of Oudenarde is in many ways as charming as any of the series. It is, as Gothic, very late. Jean Stassius, of Ghent, began it in 1525, and Jean van Pede, of Brussels, elaborated and finished it in 1530.

This was only forty years before the Antwerp Town Hall was built with no trace of Gothic in its composition, and only five years before the old Law Courts at Bruges, which were decked out with the full panoply of pilaster and entablature.

And in Oudenarde, too, by the time the belfry came to be finished the new influence from Italy had made its presence felt, and we find a Renaissance form as the crowning member.

After the playful fancy of Oudenarde the Hotel de Ville at Antwerp may appear cold and dull, but it, too, is a significant and striking building. It is the work of Cornelius de Vriendt, sometimes called Floris, built in 1561-1565.

The Italian influence was now in full swing, and the time of the architectural bookmen had come. Pieter Coecke, Hans Bloem, and Vriedman de Vries had published their translations of Serlio, their treatises on the "Cinq Coulomnes de l'Architecture."

These were dark days for Belgium. Charles V. had abdicated in 1555 in favour of his son Philip II., and the Netherlands, the Spanish Netherlands, as they were then, were about to pass through some of their most trying vicissitudes.

Many thousands of weavers came over England or passed into Holland—Walloons and Flemings alike—to enjoy the freedom of the newly formed Dutch Republic in 1579.

Belgium remained Spanish, but she still possessed some of her old vitality and vigour. In 1695 much of the Grande Place of Brussels was destroyed in Marshal de Villeroy's bombardment of the city. The city authorities at once ordered the Guilds to re-build their halls, and in three years the fantastic and theatrical, though decidedly picturesque, Guild Houses were erected.

The last, though not the least, of the civic buildings of Belgium is the work of our own age. The Palais de Justice at Brussels is an amazing work, completed so recently as 1883. In its own way it carries on worthily the old Flemish civic spirit, and deserves perhaps to rank first among the modern buildings of Europe.

Belgium for the time being is in the grip of a ruthless invader, her children are scattered far and wide, or are prisoners in their own land; many, alas! lie in nameless graves under the grey winter sky, with those of our own blood who have given their lives for liberty; her fairest buildings are many of them but heaps of smoking ruins. Her bells are silent, those bells that rang out their last wild tocsin over the land on that August night to call her sons to the Colours.

But the end is not yet. The day is nearing when the land shall be cleansed of the pollution that has come upon it, when the last German shall be hurled back to the country from whence he came. Her buildings are smoking ruins, but from the ashes of her desolation a new and fairer Belgium shall arise like the Phœnix. Her bells are silent now, but they shall ring again, ring to commemorate the assembling of a gallant King and a free people in their own capital, in honour and in peace.

THE NATIONAL GALLERY.

ACCORDING to the report for 1914 of the Director of the National Gallery (Sir Charles Holroyd) only two works, apart from those acquired from funds under the Chantrey Bequest, were purchased during the year—viz., "Portrait of a Lady and Child" (£10,000), by Sir A. Van Dyck, and "The Spiritual Form of Nelson Guiding Leviathan" (£100), by William Blake. The first-named was purchased out of the "Grant in Aid Account," and has been seen at different exhibitions in this country since 1815; the modest purchase-money for the curious Blake example came from the National Loan Exhibition Fund.

The six bequests were all from Sir John Murray Scott, Bart., K.C.B., and include a small Watteau, five battle scenes by Horace Vernet, which were purchased from King Louis Philippe's collection by Lord Hertford, and a late seventeenth-century portrait by Pierre Mignard.

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The National Loan Exhibition Fund Committee are credited with no less than ten of the pictures among the "Gifts"; the artists represented are W. W. Russell, C. H. Shannon, H. Muhrman, William Orpen, Philip Connard, Ambrose McEvoy, John Lavery, Gerald F. Kelly, Glyn W. Philpot, and Oliver Hall. All these are at Millbank. The National Art Collections Fund were instrumental in giving a drawing by Ruskin on an unusually large scale, showing in pencil and wash an angle of the facade, St. Mark's, Venice; the Fund also gave a small Blake entitled "Bathsheba at the Bath." From the Contemporary Art Society comes the half-length portrait by G. A. Storey, R.A., entitled "My Father." The bust of Sir W. Q. Orchardson, R.A., by E. Onslow Ford, R.A., comes from the Orchardson Memorial Committee, and was accepted as far back as 1911.

Although the Chantrey Bequest purchases at the 1914 Royal Academy were only four they represent over double the outlay of the previous year. The most conspicuous is F. Cadogan Cowper's much discussed work, "Lucretia Borgia reigns at the Vatican in the Absence of Pope Alexander VI." (£1,500); the other canvas is Mr. Griffenhagen's "Women by a Lake." The two pieces of marble sculpture selected were, "Dawn" (£1,100), by Charles L. Hartwell, and the bust of Mr. Henry James, by F. Derwent Wood, A.R.A.

The number of works added to the different schools in the National Gallery and at Millbank during 1914 are Flemish School, 2; French School, 6; and English School, 28.

On March 10, "Venus and Cupid," by Velasquez, was seriously damaged by a visitor to the Gallery, who was arrested, taken to Vine Street Police Station, and there charged. In consequence the Gallery was closed to the general public for a fortnight. The picture was removed from exhibition, relined, and repaired. On May 22, five pictures, by Giovanni and Gentile Bellini, were damaged by a visitor, who was arrested, taken to Vine Street, and there charged. In consequence the Gallery was closed for three months, being reopened on August 20. The pictures have all been repaired.

The report of the National Gallery Committee on the retention of important pictures in this country and other matters connected with the National Art Collections was submitted to the Board on March 10 and considered. It was forwarded to his Majesty's Treasury, who have authorised its publication.

At the outbreak of the war precautions against the possible attack of hostile aircraft were considered. The opinions and advice of certain experts were sought and acted on concerning the protection for pictures which it was considered advisable to remove from the Exhibition Galleries. Various other precautionary measures were taken to minimise the special risks of fire from the above cause.

The Committee appointed by the Trustees considered the question of electric lighting for the Gallery. It recommended that a system of "Pilot" lighting in the galleries, passages, basements, &c., and ordinary electric lighting in the library, offices, &c., should be at once installed. The Board approved the Committee's report.

In accordance with the resolution of the Trustees, Mr. S. C. Kaines-Smith, M.A., was appointed official guide at Trafalgar Square and Mr. Samuel Teed at Millbank. The guides conduct two parties daily round the galleries; a limited number of special visits can also be arranged. Since April 1, 1914, when the official guides were appointed, a period of nine months, the gross total number of visitors conducted by the guides has been as follows: At Trafalgar Square, 11,235; at Millbank, 7,138.

The Galleries were closed to the general public from March 10 to 25, and from May 22 to August 20, by order of the Trustees. During the latter period the guides assisted in conducting special foreign and colonial visitors round the collections.

The keeper of the Tate Gallery went carefully through the collection of Turner sketches and drawings in the portfolios. A report was drawn up and presented to the Board, and approved, being filed for future reference. Certain errors in the inventory were corrected with Mr. Finberg's approval.

The Gallery in Trafalgar Square was visited by 280,605 persons on the free days during the year, showing a daily average attendance on such days (148 in number) of 1,895. In addition to the above number, 36,511 persons visited the Gallery on the thirty-seven Sunday afternoons on which it was opened during the year, showing a daily average attendance of 986.

On Students' days (Thursdays and Fridays) 26,221 persons were admitted between January 1 and December 31, 1914; the admission fees (at 6*d.* each) amounting to £655 10*s.* 6*d.*, as compared with £1,386 6*s.* received in 1913.

The National Gallery, British Art, Millbank, has been visited by 119,365 persons on the free days during the year, showing a daily average attendance on such days (158 in number) of 775. In addition to the above number, 35,064 persons visited the Gallery on thirty-seven Sunday afternoons throughout the year, showing a daily average attendance of 899.

On Students' days (Tuesdays and Wednesdays) 14,233 persons were admitted between January 1 and December 31, 1914; the admission fees (at 6*d.* each) amounting to £355 16*s.* 6*d.*, as compared with £942 15*s.* 6*d.* received in 1913.

The amount annually realised by admission fees at both establishments is devoted as an "Appropriation in Aid" of the Parliamentary Vote to the National Gallery.

The total number of students' attendances at the Gallery in Trafalgar Square on Thursdays and Fridays throughout the year was 10,136. Ninety new students have been entered on the books during the year.

The total number of students' attendances at the Gallery of British Art on Tuesdays and Wednesdays throughout the year was 3,439; and fifty completed copies of the pictures have been made in oil-colour, fifty-nine in water-colours, and two in pastel. Fifty-three new students have been entered on the books during the year.

SOME NOTES ON WIND PRESSURE.*

IT may be said that our modern knowledge of wind pressure extends backwards only so far as the destruction of the original Tay Bridge in 1879. This bridge was part of the scheme for bridging the two firths—Forth and Tay—which was brought to a successful completion by the construction of a new Tay Bridge and the erection of the Forth Bridge; the latter, by the way, has been opened for traffic for just twenty-five years.

On December 28, 1879, while a train was on the bridge and a "gale of exceptional severity was blowing," one or more of the piers gave way, bringing down eleven 245 feet span and 227 feet span girders, precipitating the train and seventy-four people into the Tay. A Board of Trade inquiry was held, which showed that opinion among engineers about wind pressure was in a state of chaos.

An endeavour was at once made by a Board of Trade Committee to put matters on a satisfactory footing. After examining wind records, they on May 20, 1881, recommended:—

"That for railway bridges or viaducts a maximum wind pressure of 56 lb. per square foot should be assumed for the purpose of calculation."

This immediately came into force for railway work, and was also adopted generally for structures on public works, although such adoption was purely arbitrary, or specified in local by-laws.

Much opposition was raised to this standard of pressure, because it was considered excessive and not justified by experience of existing structures. As far as buildings are concerned, the horizontal pressure assumed for designing has gradually been reduced to the 30 lb. per square foot now often taken.

Two questions of great importance arose, and these have since been practically settled by research, viz.:—

(*a*) Were the wind velocities given by the anemometers then in use correct?

(*b*) What was the relation of wind velocity to wind pressure?

There are three methods for the measurement of wind: 1. Velocity measured by the Robinson anemometer; 2, pressure measured by a pressure tube anemometer; 3, pressure measured by a plate or board set face to the wind.

Considering 1, the anemometer that bears his name was invented by Dr. Robinson in 1846, and is by far the most used of the various instruments which have been produced from time to time. It consists of four arms at right angles; at the end of each arm is a hemispherical cup This

* Abstract of Paper by Mr. R. Graham Keevill, A.M.I.Mech.E., M.C.I., of the Works Department, Admiralty, Lecturer on Ferro-Concrete at the Northern Polytechnic, &c., read at a meeting of the Concrete Institute.

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instrument measures direct velocity, and Dr. Robinson, after experimenting, stated that the velocity of the cups was one-third the velocity of wind for all instruments, whatever their size. This is now known to be a fallacy, with the result that practically all records prior to 1902 were incorrect and generally much too high, a fact which justifies the distrust shown by the experts at the Tay Bridge inquiry respecting the records quoted then.

The discovery that the factor, 3, for the Robinson anemometer was incorrect is due to the experiments carried out by Mr. Dines, and since confirmed by other authorities.

These experiments consisted of placing anemometers on horizontal arms, which were rotated by means of a steam engine; 14½ revolutions of this "whirler" constituted half a mile of space, while great care was taken to ensure accuracy in the results. The number of turns of the whirler and the revolutions of the anemometers, both of which were counted automatically, determined the relation between the distance travelled and the revolutions of the anemometers, and thus the value of the new factor, 2.2, was obtained.

The outcome was that the Wind Force Committee of the Royal Meteorological Society in 1902 adopted the factor 2.2 instead of 3 for the standard Robinson anemometer. Thus when the old factor was used, and the instrument indicated, say, a velocity of 60 miles per hour, the use of the new factor reduced the velocity to 44 miles per hour. Converting these velocities into pressures by the formula $P = 0.003v^2$, the 60 miles per hour velocity gives 10.8 lb. per square foot, while the velocity of 44 miles per hour gives a pressure of 5.8 lb. per square foot. This very serious alteration doubtless explains the fact that chimneys, buildings, and bridges which, by all the rules of the anemometers, should have fallen down, are standing until to-day, or meeting an honourable end by the hands of housebreakers. This rotating anemometer has one great disadvantage in that, owing to the inertia of the instrument, it does not record gusts of wind which may have a much greater velocity than the average values shown by this instrument. For instance, if the record is, say, 37 miles per hour, it shows that the cups have passed through a distance of 37 miles in the hour; at some part of the time they would be revolving faster than at others, but the record shows the average speed.

Another type of instrument is the pressure tube anemometer invented by Mr. Dines. This automatically records all the varying pressures of the wind, and consequently all gusts and lulls that occur during a gale, whatever the velocity of the wind may be. The principles upon which the design of this instrument is based are that when the wind blows into the open horizontal mouth of a tube it causes an increase of pressure within it and in all air-tight arrangements connected with it. On the contrary, if the wind blows horizontally across the open mouth of the vertical tube, the column of air within the tube rises and the pressure is reduced within it, and in all air-tight arrangements connected within it. The great advantage of this instrument is that it not only gives a record of all phases of wind, but a practically perfect exposure can be obtained by mounting it on a high pole.

The third type of anemometer is, like the second type, a pressure recorder, and is in general use, although now practically obsolete. This type consists of a board or plate which, by means of a weather vane, is kept facing the wind. The back of the board is fitted with springs which keep the board up to its work. The wind acting on the face of the board drives it backwards, compressing the springs; the pressure is then measured and recorded automatically by the movement of the board or the compression of the springs. This type of instrument has been in use for many years, and, like the Robinson anemometer, the earlier forms recorded pressures which are now known to be erroneous and much too high. The cause of the high pressures recorded up to 60 lb. per square foot and over was faulty design and the momentum of the moving parts. The result has been that high pressures have been recorded and quoted by authorities when as a matter of fact the actual pressure was something less than half those shown.

This type of pressure boards was used at the Forth Bridge during its construction.

When Sir B. Baker, in conjunction with Sir John Fowler, undertook the responsibility for this great structure it became necessary to ascertain as nearly as possible what would be the probable wind pressure on the bridge in the exposed position on which it is sited.

He accordingly erected, on the top of the Old Castle on Inchgarvie, three anemometers; the principal one was 30 feet long by 15 feet high, approximately the size of the side of a railway carriage of those days, erected vertically with its surfaces facing east and west, this direction being the most unfavourable from which the wind can strike the bridge. The board was hung in a frame and fitted with four springs at the four corners to adjust the board to its normal position. The movement of the board was communicated to the registering apparatus by means of wires.

To ascertain to some extent the effect of small local gusts plates were fitted 18 inches in diameter in holes cut out of the centre of the board, and at the top right-hand corner, and arrangements made to register the pressure on them separately.

A circular plate with an area of 1½ square feet was erected to face in the same direction and 8 feet away from the large board, and provided with means for registering the pressure.

The third was a revolving gauge, also with an area of 1½ square feet, and fitted with a vane so that it always faced the wind.

These anemometers, although giving good results, were not intended to give very accurate results.

The records of the violent gales show that the average on the large board was 0.565 of the average on the small gauge, and that the average on the large board was 0.592 of the average on the revolving gauge. If we round these figures up we can say that the pressure on the large board was five-eighths the amount shown by the small gauges; a figure to be remembered when considering the records from the small anemometers in general use and applying them in design of buildings of large exposed area.

After the completion of the bridge five revolving gauges with a plate area of 1½ square feet were fixed on the bridge, and a continuous record was obtained.

These results from the Forth Bridge are interesting and valuable in that they show records of an exposed position and at considerable difference in height and width. From a consideration of them with other reliable information now available they appear to be high in value and to be influenced by gusts and possibly by some momentum of the plates of the anemometers.

The most valuable information available respecting wind velocities is undoubtedly that given by Dr. Shaw in his report on the Beaufort scale of wind force, which is compiled from the records of the anemometers at various meteorological stations.

This information shows the number of gales of wind exceeding 37 statute miles in the hour, grouped according to the maximum hourly velocities recorded by Robinson anemometers.

The point that is most striking after a study of the records is that pressures over about 12 lb. per square foot are rare. It must be borne in mind these records are averages, and that individual gusts would give higher pressures on small areas.

Dr. Shaw, in his Reports and Memoranda, No. 9, compiled in connection with the Advisory Committee for Aeronautics, defines "the ordinary 'gustiness' of a steady wind" as the "variation of the velocity and direction of the wind, while the average hourly velocity remains practically unchanged, or increases or decreases gradually. The intervals of these gusts are of the order of some fraction of a minute; they are largely a question of exposure of the anemometer."

Another type of wind is known as the "line squall" which, Dr. Shaw says, sets "in as a temporary wind of great violence, accompanied by sudden changes of all the meteorological elements, and generally also by thunder and lightning. These are the most dangerous of all winds, with the exception of tropical hurricanes, which do not occur in our latitude."

The relation between coast and inland winds is a practical question which often arises when an important structure is to be designed in some locality where building regulations are of an elementary character or non-existent, and where the only guide is the possession of reliable information, such as that already quoted, but which has been taken at one or more exposed stations near the coast whilst the proposed structure may be sited some distance inland. Dr. Shaw says that, "speaking from the daily experience of weather maps we may say that a westerly wind of force 8 at an exposed western station will be represented at an inland or east coast station by a wind force of 5. The corresponding reduction in velocity is from 42 to 21 miles per hour. Provisionally, therefore, we may say that the surface wind velocity" (that is,

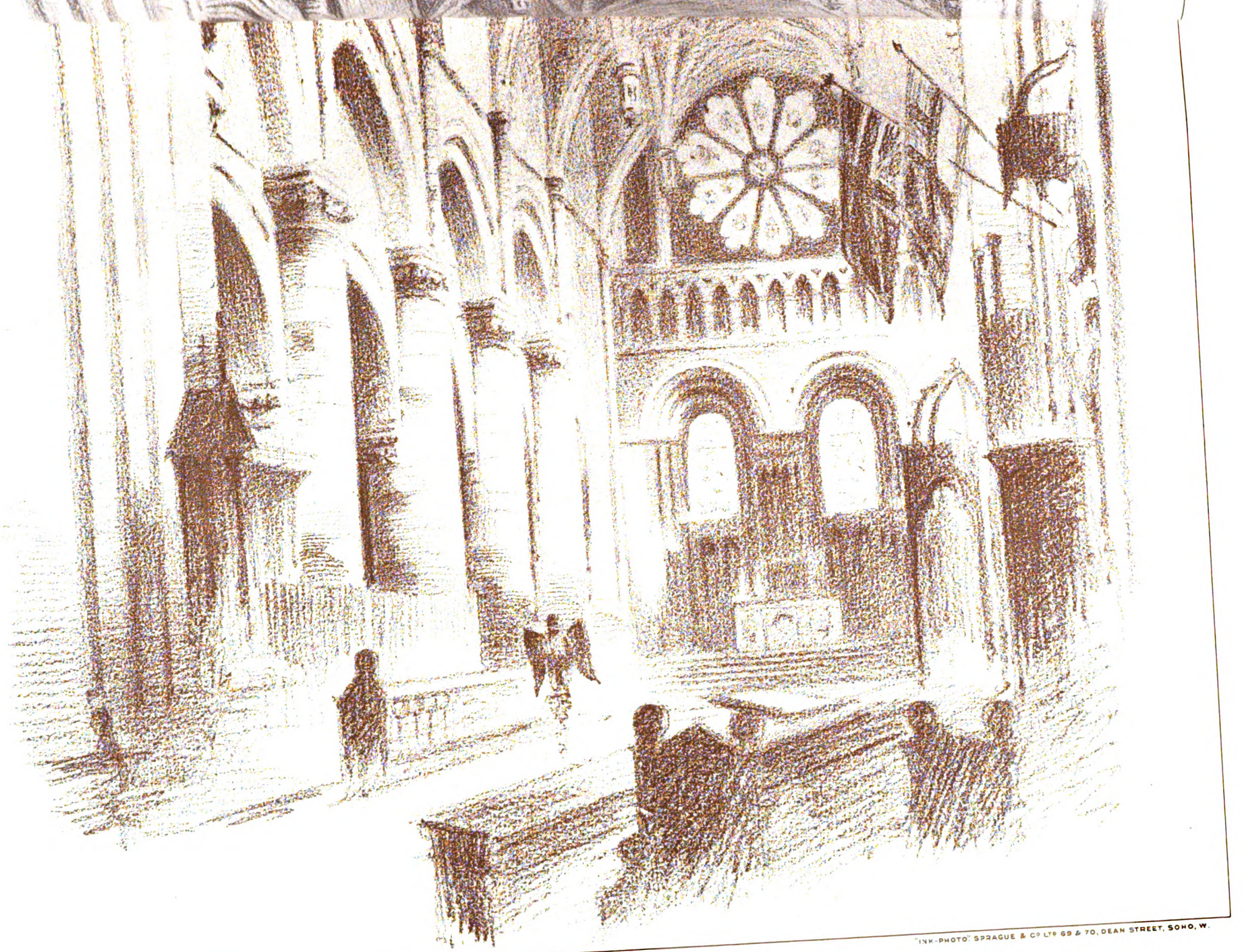
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THE CHOIR, OXFORD CATHEDRAL.

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"The Architect" Travelling Student, 1914.

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HOUSE AT GUILDFORD.

By Mr. C. E. SALMON, M.S.A., Architect.

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Up to the present assumed wind pressures, which are undoubtedly excessive, have been in general use for designing, and very safe structures have been the outcome; but with the advance of knowledge the very heavy structures now common will gradually give place to more scientific designs and a corresponding saving of material. New methods now being evolved will then become of the greatest importance.

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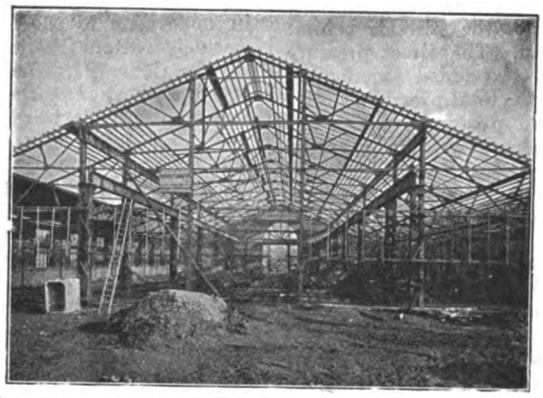
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received from the Architects' Benevolent Society, the Artists' General Benevolent Institution, and Professional Classes War Relief Committees.

A Committee of Guidance has been formed, and is constituted as follows:—Sir Aston Webb, K.C.V.O., C.B., R.A., Chairman; Mr. Carmichael Thomas; Mr. Raymond Unwin; Professor Adshead, N.W. Section; Mr. Arthur Crow, N.E. Section; Mr. W. R. Davidge, S.E. Section; Mr. David Barclay Niven, S. Section; Mr. H. V. Lanchester, S.W. Section.

The Society are also fortunate in having the assistance of Mr. Drysdale in the preparation of the plan, who is kindly giving his honorary services in co-ordinating the work of the Committee and the draughtsmen employed; without such assistance no steady progress could be made.

Further particulars of the work are given in the January number, and will be published in further issues of the Journal of the London Society.

The Earl of Plymouth, in moving the adoption of the report, said that the object of the Society was to turn the gifts which Providence had given them to such purposes as would be most useful and helpful at the present time. They were trying to find a way of doing more useful work than was originally in the general programme. They were copying the example set at the time of the French Revolution, when during that time a great deal of the rebuilding of Paris was conceived and definitely set on paper. The Society had engaged a number of professional men who were sufferers by the war to prepare plans for the future development of London.

Sir Aston Webb described some of the work of the Society, particularly with regard to improvements in South London, the rebuilding of Charing Cross Bridge and the Station, and the extension of London arterial roads.

THE LATERAL PRESSURE AND RESISTANCE AND THE SUPPORTING POWER OF CLAY.*

By ARTHUR LANGTRY BELL, B.A., B.E., M.Inst.C.E.

DIFFICULTY is always to be anticipated in attempting to estimate the lateral pressures and resistances of clay, its constitution and properties being obscure.

The engineer is not interested in the complex problems which attract the attention of the physicist, but would be content with a practical, simple, and sufficiently correct method of estimating the pressures and resistances exerted by clay, so far as these affect the design and stability of structures.

Published information is unfortunately insufficient to aid an engineer when confronted in practice with problems calling for a precise knowledge of the matter. He cannot hope to build a safe structure at the least cost unless he can make some reasonably accurate estimate of the forces with which he has to deal. Owing to reasons which appear later in the Paper, the accepted theories of earth-pressure do not afford him much assistance.

There are two theories of earth-pressure ordinarily used in English practice—Coulomb's and Rankine's. Both these theories apply to "a loose granular mass"—a definition which cannot possibly include undisturbed clay. Both also pre-suppose a knowledge of the angle of repose. The text-books in current use give angles of repose for clay varying from 1° to 45°, and observation of the material itself is of little value when selecting the angle to be used for calculations. Widely different results will be obtained according to the angles chosen. The results of calculations by these methods are also found to be at variance with observed facts.

In the author's view, the lack of agreement is due not so much to error in the existing theories as to a misapprehension as to the extent of their applicability. It is the purpose of the Paper to bring before the members of the Institution an extension or modification of Rankine's theory, which, when applied to clay, yields results more closely in accordance with fact and observation.

It was in connection with the monolith foundation work at Rosyth Dockyard that the investigation which forms the subject of the paper was made.

As the work of founding the monoliths proceeded Rankine's formulas were duly applied to the different cases which arose, but in view of the doubt as to the applicability of the formulas to clay, and as to the correctness of the assumed angles of repose, the results were regarded rather as aids to practical judgment than as actual and reliable solutions of the problem of stability.

A search through all available records did not yield much information of value or furnish a theory of clay pressure. Practical experience with tunnels and embankments appeared to indicate that the pressures exerted by clay resembled those due to a heavy fluid. This view is supported by a previous contribution by the late Sir George H. Darwin.

The search revealed a high percentage of failures in work constructed in clay.

The broad conclusions to which the investigation led were that there was no available theory of earth-pressure which, when applied to clay, would command the general confidence of engineers. There were no fixed rules of practice, and there were grave differences of opinion as to what intensities of pressure could safely be placed upon clay foundations.

Experiments were undertaken with a view to throwing further light upon the question. The first experiments described were made in a small testing cylinder 8 inches in diameter, fitted with gauges at the ends and sides. The results are given of a few tests with this apparatus, but the author does not regard them as having much value.

Up to this point, following established custom, it had been thought that, however difficult it might be to find the true angle of repose for clay, it might be possible by experiment, or as the result of experience, to hit upon an angle which, when introduced into the generally recognised formulas, would give correct results. Suspicions were now felt that the root of the difficulty lay deeper, and that the true reason why Rankine's and Coulomb's theories were not applicable to clay was because clay did not conform to the law of resistance to shear which forms the initial basis of both those theories.

Rankine expresses the primary law upon which his theory is based in the following words: "The resistance to displacement by sliding along a given plane in a loose granular mass is equal to the normal pressure exerted between the parts of the mass on either side of that plane multiplied by a specific constant."

The symbolical expression of this law is

$$q = p_n \mu = p_n \tan \phi,$$

p_n representing the intensity of normal pressure on the plane of shear and q the intensity of resistance to shear on the same plane. μ, the "specific constant," is equal to tan ϕ, ϕ being the angle of repose.

If it could be shown that clay failed to comply with this primary condition, then it seemed clear that formulas deduced from this condition were inapplicable to clay.

To carry out the desired tests another apparatus was made, consisting essentially of a vertical cylinder 3 inches in diameter and about 10 inches high. Fitting into the upper end was a plunger which could be weighted on top, so as to compress the clay placed within the cylinder below it. Arrangements were made whereby the clay (while under pressure in a vertical direction) could be sheared through horizontally. The vertical load upon the clay and the pull required to shear through the clay being both known and capable of variation at will, it is possible with this apparatus, by making successive tests with different specimens of the same clay placed under varying degrees of compressive stress, to determine the law which governs the relation between the ultimate shearing resistances and the normal pressures on the planes of shear.

Experiments made with sand gave results closely in accordance with Rankine's law as stated above. It was found that no kind of clay complied with this law. According to Rankine's law, where there is no pressure there is no resistance to shear, but in all cases clay was found to resist shear where the pressure was zero. The rate of increase of shearing resistance with advancing pressure was found not to be so great as would be inferred from Rankine's law, adopting the angles of repose ordinarily current in practice.

It was found that when plotted in diagram form (with equal horizontal and vertical scales) the results with clay could be represented, with reasonable accuracy, by straight lines. These lines did not, however, pass through the origin (as would be the case in material complying with Rankine's law). In all cases they cut the vertical axis which passes through the origin at a distance k from the origin, and with advancing pressure the resistance to shear increased in proportion to an angle α; α being the inclination of the straight line to the horizontal axis.

Stated symbolically, the law to which clay conformed—

* Abstract of a Paper read at an ordinary meeting of the Institution of Civil Engineers.

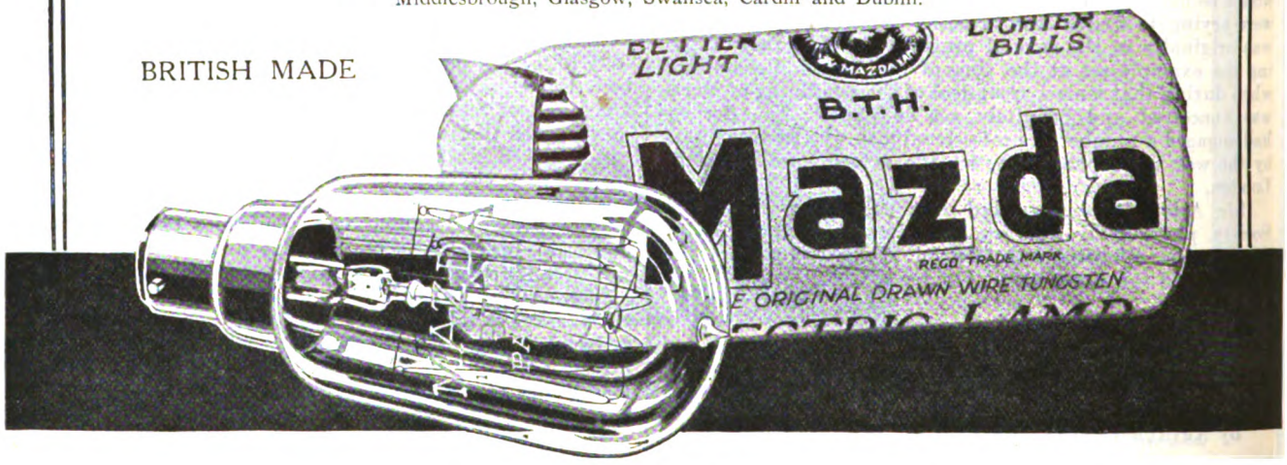
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Sturdiness

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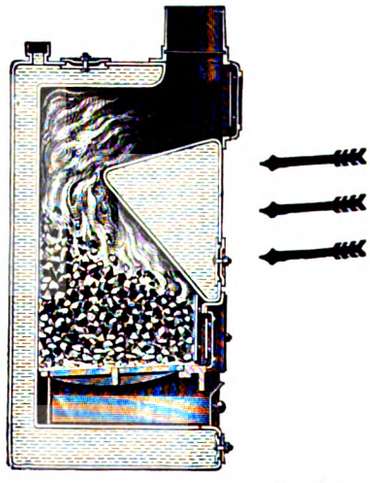
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so far as its shearing properties were concerned—was found to be

$$q = k + p_n = \tan a$$

q representing the intensity of resistance to shear, p_n the intensity of normal pressure upon the plane of shear, and k the intensity of resistance to shear under zero pressure.

The law stated above becomes identical with Rankine's if k be taken as zero and a as the angle of repose.

To make clear the state of stress and of resistance within a body subjected to external pressure, curves are shown illustrating the intensities of stress and resistance in sand and in clay. From these diagrams and by a simple methematical proof it is shown where the plane of rupture occurs both in sand and in clay. The position of the plane of rupture ascertained in this manner is found (in the case of sand) to be identical with that deduced in a different way by Coulomb.

Having determined the position of the plane of rupture in clay, the author next proceeds, by considering the equilibrium of minute masses of clay in contact with the wall, to deduce formulas for the pressure and resistance of clay. The deduced formulas are then compared with Rankine's in the following table:—

	Rankine	The Author
p_a = intensity of active pressure on back of wall at any depth h . . .	$w h \left(\frac{1-\sin\phi}{1+\sin\phi}\right)$	$w h \tan^2\left(\frac{\pi}{4}-\frac{a}{2}\right) 2k \tan\left(\frac{\pi}{4}-\frac{a}{2}\right)$
r_a = maximum intensity of horizontal resistance of material in front of a wall at any depth d . .	$w d \left(\frac{1+\sin\phi}{1-\sin\phi}\right)$	$w d \tan^2\left(\frac{\pi}{4}+\frac{a}{2}\right)+2k \tan\left(\frac{\pi}{4}+\frac{a}{2}\right)$
p_b = minimum permissible intensity of downward pressure on foundation at heel of wall (depth H).	wH	$w H \tan^2\left(\frac{\pi}{4}-\frac{a}{2}\right) - 2k \tan^2\left(\frac{\pi}{4}-\frac{a}{2}\right) - 2k \tan\left(\frac{\pi}{4}-\frac{a}{2}\right)$
r_b = maximum permissible intensity of downward pressure on foundation at toe of wall (depth D) .	$wD \left(\frac{1+\sin\phi}{1-\sin\phi}\right)^2$	$w D \tan^2\left(\frac{\pi}{4}+\frac{a}{2}\right) + 2k \tan^2\left(\frac{\pi}{4}+\frac{a}{2}\right) + 2k \tan\left(\frac{\pi}{4}+\frac{a}{2}\right)$

These formulas suffice for the design of retaining-walls in clay, the surfaces being assumed horizontal: the Paper is limited to the consideration of this case only.

If k be taken as zero and a equal to ϕ, the new formulas (with one exception) become identical with Rankine's. The exception referred to (namely, the minimum permissible intensity upon a foundation) is then discussed, and reasons are given for adopting the newer formula. It is also pointed out that there is another essentially practical reason for the final abandonment of the value wH, namely, that, by what appears to be the general consent of engineers, it has, in fact, been already abandoned. It is questionable whether any large retaining-wall has been built in accordance with it.

It was thought desirable to supplement the theoretical work by making direct observations of pressure within a large mass of clay. The four diaphragm gauges used in the previous cylinder tests were built into the side of one of the monoliths, being arranged in two pairs. The gauges of the lower pair were fixed side by side at a height of 10 feet above the cutting edge of the monolith shoe, while directly above them, and 12 feet 8 inches higher up, were the two remaining gauges. By adopting this arrangement it was intended that each gauge-reading should constitute a check upon the reading of that beside it; while the readings of the lower pair at any depth would be checked at a later date by those of the upper pair when the latter reached the same point.

The actual uncorrected readings of all four gauges, taken from time to time as opportunities offered during sinking, are shown by diagrams, together with a section of the strata through which the monolith was sunk.

Unfortunately one pair of gauges was spoiled by leakage, and owing to damage by blasting the records obtained from the other pair were insufficient to confirm completely the theoretical conclusions previously obtained. But so far as the records went they appeared to be in reasonable conformity with the theoretical position discussed in the Paper.

The laying of too much stress upon the few readings obtained is deprecated, and the practicability of making effective use of the new formulas is discussed. It is pointed out that it is not easy when designs are in progress to obtain clay in its virgin state and from considerable depths below the surface for the purpose of making tests; and in certain methods of construction—the sinking of monoliths, for example—the strata are often never seen in their normal condition, even when the works are in progress. Further, the building of a new work may have, in the course of years, the effect of altering the condition of the strata which press upon the structure. What the extent of these changes will be, and whether they will be beneficial to stability or otherwise, will never be determinable by purely mathematical methods. If reasonably correct results are to be obtained, some measure of judgment must lend its aid towards the solution of the real problems of earth-pressure which occur in practice, as distinguished from the simplified and somewhat unreal problems with which theorists necessarily deal.

The Paper concludes with the usual formal acknowledgments, and a tabular statement of average values of k and a, so far as present experience goes.

The appendices include an independent proof by Professor Maurice F. Fitzgerald yielding results identical with those obtained by the author by different methods.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

High Wycombe.—Workhouse: additions and alterations. Mr. T. Thurlow, architect, 25 High Street. Messrs. Jewell & Sons (of Aylesbury), contractors.

CHESHIRE.

Ashley Heath.—Tuberculosis sanatorium, for the County Council.

Ellesmere Port.—Council Offices. Mr. H. P. Beckett, architect, Bank Buildings. Mr. E. Griffiths, contractor (£4,650).

Macclesfield.—Workhouse: infirmary additions. Mr. Bradburn, architect, 19 King Edward Street.

Styal.—Church, for South Manchester B.G. Cottage Homes Colony.

Weston Point.—Hotel, South and Weston Roads, for Messrs. Greenall, Whitley & Co., Ltd. (£4,000 to £5,000).

CUMBERLAND.

Carlisle.—Engine drivers' dormitory, Kingmoor: extension. Caledonian Railway Company's Engineer.

DORSET.

Portland.—Council Offices. Messrs. Petter & Warren, architects, Church Street, Yeovil.

ESSEX.

Chingford.—House, Heathcote Grove, for Mr. C. W. Martin.

House, Pole Hill, for Mr. A. B. Porter.

Ilford.—Carnegie Central Library (£6,000). Council surveyor.

Stratford.—G.E.R. Company's Works (£60,000).

Tilbury.—One hundred and fifty Garden City houses. Messrs. Pepler & Allen, F.R.I.B.A., architects, 4 Arundel Street, Strand, London.

HAMPSHIRE.

Alton.—Workhouse: proposed infirmary.

Redbridge.—Schultze Powder Works: enlargement.

LANCASHIRE.

Bolton.—Wesleyan Church, Chorley Old Road, Smithills: classroom extension. Messrs. Potts & Hennings, AA.R.I.B.A., architects, 14 Bradshawgate.

Clubhouse, Fairhaven Road, for Back-o'-th'-Bank Bowling Club.

Fleshing-machine house, Nelson Street, for Messrs. W. Walker & Sons.

Hotel, Manchester Road, for Mr. T. Kenyon.

Eight houses, off Chorley Old Road, for Mr. J. England.

Great Harwood.—New Grand Theatre: alterations. Mr. H. J. Pollard, architect.

Liverpool.—Proposed picturedrome, London Grove and High Park Street, for Mr. G. D. West.

Proposed picturedrome, Miranda Road and Braemar Street, Kirkdale, for Mr. W. J. Ewbank.

Rishton.—Picture palace, High Street. Mr. H. J. Pollard, architect.

Wigan.—Girls' high school, Mab's Cross. Messrs. W. C. Ralph & Son, R.I.B.A., architects, Leaders Buildings, King Street. Messrs. J. Johnson & Son, contractors, 9 Caroline Street.

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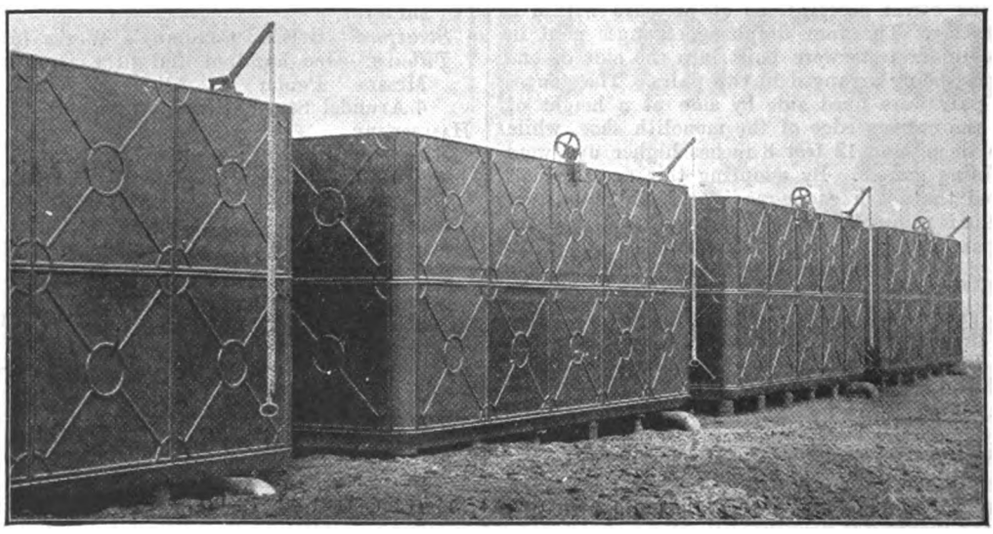
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ENGLAND—*continued.*

LEICESTERSHIRE.

Hinckley.—Seven houses, the Ten Foot, Factory Road. Mr. G. Cooper, builder, Midland Road, Nuneaton.

LINCOLNSHIRE.

Lincoln.—No. 17 Sincil Street: alterations, for Mr. A. E. Smith.

Café, High Street, for the Picture House Company.

Garage, &c., Holland Row, Newland, for Messrs. Cave & Co.

Council School, Monks Road: additional 300 places.

MIDDLESEX.

Shepperton.—Proposed parish hall, Highfield Road.

MONMOUTHSHIRE.

Bedwellty.—Higher elementary school.

Nantyglo.—Domestic arts centre, Garnfach.

NORTHAMPTONSHIRE.

Northampton.—Public elementary school (for 1,200 places) and manual training, &c., accommodation, St. James' Road.

NORTHUMBERLAND.

Berwick-on-Tweed. — Station, for N.B.R. Company (£30,000 to £40,000).

NOTTINGHAMSHIRE.

Mansfield.—Proposed workmen's houses.

Nottingham.—Proposed three branch libraries.

SHROPSHIRE.

Shrewsbury.—Factory, Old Heath, for Messrs. Alley & MacLellan. Mr. A. E. Williams, architect, 12 High Street.

Wellington.—Council school, Wrekin Road: alterations; also works at the New Hall. Mr. A. Roper, contractor, Walker Street (£543).

SOMERSET.

Midsomer Norton.—Public elementary school (for 120 infants), Westfield.

Taunton.—Workmen's dwellings. Borough surveyor. Mr H. G. Smith, contractor, East Reach (£1,821).

STAFFORDSHIRE.

Cannock.—Ten pairs of Council houses, Beech Tree Lane (£5,100). Council surveyor.

Chase Terrace.—House, Cross Street, for Mr. J. H. Allsopp.

Chasetown.—Two houses, Rugeley Road, for Mr. N. Thompson.

Hednesford.—Twelve pairs of houses, Belt Road, for Cannock U.D.C. (£5,600). Council surveyor.

Lichfield.—Twenty workmen's dwellings, Greenup's Row.

Stafford.—Proposed engineering school, Cherry Street.

Stoke-on-Trent.—Proposed girls' secondary school.

SUSSEX.

Bexhill.—Isolation hospital, Church Green (£6,500).

Lancing.—Parish Hall. Mr. H. M. Potter, architect, 41A Warwick Street, Worthing.

WARWICKSHIRE.

Bedworth.—Picture palace: addition, for Messrs. Whittal & Shute.

Birmingham.—School clinic, Harborne Lane. Mr. H. T. Buckland, architect, Norwich Union Chambers, Congreve Street.

Coventry.—Proposed public-house, Holmfield Road, Stoke, for Mr. J. C. Egginton.

Foleshill.—Six houses and a shop, Barton Road, for Mr. T. Harris.

Nuneaton.—Shop, Queen's Road, for the Co-operative Society. Mr. H. J. Ash, A.R.I.B.A., architect, 12 Market Place.

WILTSHIRE.

Purton.—Council school.

WORCESTERSHIRE.

Droitwich.—Hydro, Corbett Avenue, for Mr. F. T. Evered.

YORKSHIRE.

Barnsley.—House, Bond Road. Mr. E. W. Dyson, architect, 10 Regent Street.

Huddersfield.—St. Matthew's Sunday School. Primrose Hill.

Sculcoates.—Church, for the trustees of St. Mary's.

Sowerby Bridge.—Proposed public baths.

Two pairs of houses, Bright Street, for Messrs. Stockton & Hitchen.

WALES.

Cardiff.—"The Empire" Theatre: reconstruction, for Moss' Empires.

Neath.—House. Messrs. Jones & Arnold, architects, Great Western Chambers.

Pontypridd.—Picture house and shops. Messrs. Thomas & Morgan, architects, Church Street Chambers.

SCOTLAND.

Arbroath.—Factory, Spring Garden: addition, for Messrs. D. Corsar & Sons.

Clydebank.—Two villas, Barns Street, Whiterock. Mr. J. Taylor, builder, Duke Street.

Crosshill.—Board school: additions and alterations (£1,200).

Glasgow.—Electricity Works, Dalmarnock Bridge, for the Corporation; also

Southern Fire Station, Wallace Street.

Hawick.—Double villa, Douglas Road West, for the Building Society.

Boiler and engine house: addition, for the Urban Electric Company.

Liberton.—Proposed institute.

Mossend.—Works, Fullwood, for the Lanarkshire Foundry Company.

IRELAND.

Balbriggan.—Thirty workmen's cottages.

Enniskillen.—Thirty-two artisans' dwellings.

Wexford.—Six houses, Hill Street (£1,145). Mr. Browne, contractor.

Eleven houses, Hill Street and Westgate (£1,323). Mrs. O'Connor, contractor, Main Street.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 25,705. May 11, 1914.—J. G. Galley, 49 West Street, Leytonstone. Securing device for ventilators, casements, fanlights, and other hinged windows.

26,812. Nov. 21, 1913.—H. M. Batson, Vaughan, Nicholas, West Virginia, U.S.A. Seat-guards for closets.

3,533. Feb. 11, 1914.—Chas. Burkill, 48 Linden Grove, Peckham. Cold storage chambers or chests.

3,627. Feb. 12, 1914.—J. E. Lea, B.Sc., M.I.M.E., 32 Deansgate, Manchester. Liquid measuring apparatus.

3,722. Feb. 12, 1914.—A. F. Berry, 27 Woodville Road, Ealing. Electrical heating apparatus.

3,924. Feb. 16, 1914.—David Beards, 82 Limes Road, Tettenhall, near Wolverhampton, Stafford; Enoch Beards, David Beards, junr., and A. C. Beards, Anchor Works, Back Lane, Willenhall. Latching bolts of latches and locks.

4,156. Feb. 18, 1914.—Robert Leggott and W. & R. Leggott, Ltd., Silens Works, East Parade, Bradford. Pivoted casement windows.

4,236. Feb. 18, 1914.—M. D. Scott, 49 Hamlet Gardens, Ravenscourt Park, W., and M. T. Medway, 10 Bush Lane, E.C. Electric lifts.

4,653. Feb. 23, 1914.—S. L. Elborne, Wootton House, Peterborough, and Herbert Godsal, 35 Chesham Street, Belgrave Square, S.W. Adaptation of radiators for humidifying purposes.

7,675. March 26, 1914.—John Cable, 27 Blackett Street, Putney, S.W. Fastening device for casement windows.

11,523. May 9, 1914.—J. H. Noonan, 234 Hobson Street, Auckland, N.Z. Gas cooker.

14,148. June 12, 1914.—Robert Warner, bellfounder, Spitalfields Bell Foundry, Spelman Street, E., and W. A. Greening, 35 Beresford Road, Walthamstow. Mounting of bells in belfries.

14,534. June 17, 1914 (dated under International Convention Aktieselskabet De Forenede Norske Laase-og Beslagfabriker, Helgesensgate 30, Christiania).—Lock with safety locking device.

18,518. Aug. 10, 1914.—E. C. Wallace, 92 Corey Street, West Roxbury, Massachusetts, U.S.A. Bituminous macadamised roads.

19,819. Sept. 15, 1914.—G. H. Stanbridge, 7514 Cornelia Avenue, Cleveland, Cuyaboga, Ohio, U.S.A. Bolts for doors.

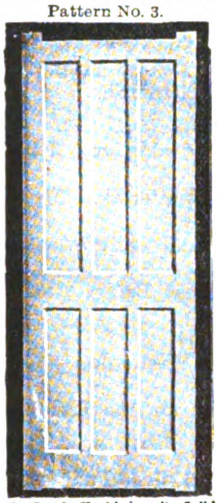
25,182. Nov. 4, 1913 (dated under International Convention Nov. 8, 1912).—Chemische Werke vormals Dr. Heinrich Byk, Schnitz-Nordbahn, Berlin. Manufacture of solutions, varnishes, lacquers, or the like.

20,918. Oct. 13, 1914.—Walter Barnett, Bilton Hall, Rugby, and James Florendine, 16 Bridget Street, New Bilton, Rugby. Road-sweeping machines.

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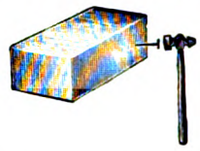


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THE
Architect and Contract Reporter.
FRIDAY, MARCH 19, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1s., which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1s. deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

WHITEHAVEN.—April 21.—The Town Council invite competitive designs for the laying out of the Coach Road site (6a. 1r. 25p.) within the borough and erection of houses thereon. The author of the design placed first in order of merit may be employed as architect on terms to be arranged, and if not so employed will receive a premium of thirty guineas. The author of the design placed second will receive twenty guineas, and the third ten guineas. Copies of conditions of competition and plan of site and other particulars can be obtained on application, upon depositing £2 2s. The Borough Surveyor, Town Hall, Whitehaven.

CONTRACTS OPEN.

ABBOTS LANGLEY.—March 23.—For erection of two pairs of semi-detached cottages near Bedmond, in the parish of Abbots Langley, for the Watford Rural District Council. Deposit £1 1s. The Council Offices, 9 Market Street, Watford.

ASHINGTON (NORTHUMBERLAND).—April 17.—For the supply and erection of the following, for the Ashington Urban District Council: (1) steel-framed retort house, coal store, purifier house and steel chimney; (1A) continuous vertical retort house, retort bench and coal store complete; (2) retort bench, regenerator settings and retort ironwork; (3) boiler house, stores, offices and concrete foundations; (4) concrete gasholder tank and tar and liquor tanks; (5) gasholder. Deposit £5 5s. Mr. C. Alderson, clerk, Bridge Street, Morpeth, or Messrs. W. A. Valon & Son, Caxton House, Westminster, S.W.

AYLESBURY.—March 26.—For erection of additions to gentlemen's convenience, Town Hall. Deposit £1 1s. Mr. W. H. Taylor, engineer and surveyor, Town Hall, Aylesbury.

AYLSHAM.—March 20.—For alterations and additions to house, proposed to be converted into children's home, in Millgate, Aylsham, for the Guardians of Aylsham Union. Deposit £1 1s. Mr. J. O. Bond, architect, 29 Castle Meadow, Norwich.

BANSTEAD.—March 23.—For erection of ten cottages at Canons Lane, for the Epsom Rural District Council. Mr. A. C. Williams, architect and surveyor, the Offices of the Council, Waterloo Road, Epsom.

BRIDLINGTON.—March 29.—For erection of new buildings in extension of the Bridlington Grammar School. Deposit £1. Mr. J. Bilson, architect, 23 Parliament Street, Hull.

BRISTOL.—March 31.—For repairs, painting, papering, &c., two cottages in South Mead Road; also alternative quotations for demolition of the cottages and erection of two new houses on the site, for the Guardians. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

BURY (LANCS.).—March 24.—For conversion of the carriage shed at Bury (E.L.) into a carriage repair shop, for the Lancashire and Yorkshire Railway. The Engineer's Office, Hunt's Bank, Manchester.

CAVERSWALL.—March 22.—For the enlargement of Adderley Green Council School, Caverswall, near Stoke-on-Trent, by the addition of a classroom, cloakroom, &c., for the Staffordshire Education Committee. Send applications and £1 1s. deposit by March 22 to Mr. G. Balfour, director of education, Stafford.

CHELMSFORD.—March 22.—For erection of an engine house and incidental works at their Admiral's Park Waterworks, for the Town Council. Deposit £2 2s. Mr. P. T. Harrison, A.M.I.C.E., borough engineer, Municipal Offices, Chelmsford.

EGLOSKERRY.—April 10.—For erection of a Council school at Egloskerry, for the Cornwall Education Committee. Deposit £1 1s. Mr. B. C. Andrew, architect to the committee, Biddicks Court, St. Austell.

ERITH.—April 3.—For erection of a new ward and extensions to the administration block at the Erith Sanatorium, Little Heath, Belvedere, for the Erith Urban District Council. Deposit £2 2s. Mr. H. Hind, surveyor, Council Offices, Erith, Kent.

GRANGE-OVER-SANDS.—March 23.—For the whole or separate works required in erection of a detached residence at Charney Well Lane, for Mr. Isaac Widdup. Mr. R. B. Barker, architect, Arnside.

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GRASSINGTON.—March 30.—For all trades required in erection of sanatorium buildings at Grassington, Yorks. for the Bradford Corporation. The City Architect, Town Hall, Bradford.

HOLBEACH.—April 1.—For erection of a pair of cottages on Greenfield Farm, near Saracen's Head, Boston Road, for Mr. W. Waite. Mr. F. Burdett Ward, M.S.A., architect, 8 South Brink, Wisbech.

HOVE.—March 24.—For constructing a public lavatory at Hove Cemetery. The Borough Surveyor's Office, Town Hall, Hove.

HUNTINGDON.—March 26.—For building new nurses' rooms at the Union Workhouse. Mr. S. I. Ladds, A.R.I.B.A., Market Place, Huntingdon.

IRELAND.—March 26.—For erection of a Presbyterian Church at Cloughwater, Ballymena. Mr. S. J. M'Fadden, C.E., architect, Queen Street, Coleraine, and Church Street, Ballymena.

IRELAND.—March 31.—For equipment of a cookery room at the Marlborough Street training college, Dublin. Mr. J. F. Fuller, architect, 179 Great Brunswick Street, Dublin.

IRELAND.—April 10.—For erection of two temporary blocks for male and female patients at the District Asylum, Ballinasloe, each block to accommodate fifty patients. Buildings to be erected in Hy-Rib system of reinforced concrete. Deposit £2 2*s*. Mr. G. B. Meenan, engineer, 83 Botanic Road, Dublin.

IRELAND.—April 12.—For alterations and additions to Dungannon House, and for the erection of a pavilion and medical officer's residence at Dungannon House, Dungannon, County Tyrone, for the County Council. Mr. James Hunter, B.A., architect, Lisburn, and Mr. C. S. Hunter, quantity surveyor, Scottish Provident Buildings, Belfast.

LEYTON.—March 30.—For the construction of underground conveniences at the junction of Church Road and Lea Bridge Road, for the Leyton Urban District Council. Deposit £10. Mr. E. H. Essex, A.M.I.C.E., Town Hall, Leyton.

LONDON.—For the repairing of the floor, roof, belfry, &c., at the St. Clement's Church, Fulham Palace Road, Fulham. Mr. Churchwarden T. Skinner, 6 Silvertown Road, Hammersmith, W.

LONDON.—March 30.—For taking down and placing in store, and subsequently re-erecting and fitting, the temporary floor and platform over the first-class swimming bath, Lime Grove, Shepherd's Bush, for one or three years, for the Hammersmith Borough Council. Mr. H. Mair, borough surveyor, Town Hall, Hammersmith, W.

MAGHULL.—March 22.—For erection of two residences for officials and a mortuary at Moss Side Institution, Maghull, near Liverpool, for the Board of Control. Messrs. W. M. Law & Son, surveyors, May Buildings, 51 North John Street, Liverpool. Send applications and £1 1*s*. deposit by March 22 to Mr. O. E. Dickinson, secretary, 66 Victoria Street, S.W.

MANCHESTER.—March 24.—For the erection of baths at Barlow Road, Levenshulme, for the Baths Committee. The City Architect, Town Hall, Manchester.

MANCHESTER.—March 24.—For erection of a hospital block on their estate at Withington, for the South Manchester Board of Guardians. Deposit £1 1*s*. Mr. F. H. Overmann, F.M.S.A., 49 King Street, Manchester.

NETTESWELL.—March 23.—For erection of a cottage at the sewage disposal works at Netteswell, for the Epping Rural District Council. Send application by March 23 to Messrs. Tooley & Foster, architects, Buckhurst Hill.

ROMFORD.—For the construction of a concrete retaining wall, about 216 feet long, in Slewins Lane, Hornchurch, for the Romford Rural District Council. Mr. G. Lapwood, 16A South Street, Romford.

SCOTLAND.—March 23.—For mason, carpenter, slater, plaster, plumber, and painter works of rebuilding property in Frithside Street, Fraserburgh, for Messrs. Batchan & Co. Mr. W. E. Gauld, F.R.I.B.A., Saltoun Chambers, Fraserburgh.

SCOTLAND.—March 27.—For the mason, carpenter, and slater works of alterations, &c., to Glenlatterach Farm steading. Mr. A. Cameron, factor, the Seafield Estates Office, Elgin.

SCOTLAND.—March 29.—For the erection of the new western district sorting office, Edinburgh, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work, and not for separate trades. Deposit £1 1*s*. H.M. Office of Works, 3 Parliament Square, Edinburgh.

SCOTLAND.—March 29.—For the execution of plaster, plumber, slater, and patent glazing work required at erection of electricity sub-station at Walton Street, Dundee, for the Town Council. Mr. H. Richardson, M.I.E.E., general manager and engineer, Electricity Department, Dundee.

SCOTLAND.—March 31.—For mason, joiner, slater, plaster, plumber, tile, asphalt, heating, ventilating, painter, smith, and electric work in connection with the erection of a proposed new school in Barclay Street, Cowden Beath, for the Beath School Board, Fife. Deposit £1 1*s*. Mr. Charles Campbell, architect, Methil.

SETTLE.—March 20.—For the mason's, joiner's, slater's, plumber's, and painter's work required to be done in taking down and rebuilding a warehouse at Settle. Mr. W. Dawson, ironmonger, Market Place, Settle.

SELSEY.—March 30.—For the construction of a water tower or reservoir of 50,000 gallons capacity upon piers 40 feet above the ground level, to be constructed on the "Kahn" system of ferro-concrete, for the Selsey Water Co. Tenders based upon other systems of ferro-concrete would be considered if accompanied with plans, specifications, &c. Messrs. J. O. Holt & Sons, 4 West Gate, Chichester.

SHEFFIELD.—March 24.—For erection of public conveniences in various parts of the city, for the Health Committee. Deposit £1. Mr. C. F. Wike, M.I.C.E., city engineer, Town Hall, Sheffield.

SOUTHALL.—March 23.—The Southall-Norwood Urban District Council propose erecting 42 houses at Western Road and 12 houses at Norwood Road, and invite tenders for the direct supply of the necessary materials required in the construction of such houses; also for the labour required in the erection in various trades. Mr. R. Brown, M.I.C.E., M.I.Mech.E., F.S.I., &c., engineer and surveyor, Town Hall, Southall.

SURFLEET.—March 27.—For erection and completion of three cottages and outbuilding in the parish of Surfleet, Lincs., for the Spalding Rural District Council. Messrs. Davis & Crowley, architects, 6 Double Street, Spalding, or at 2 York Row, Wisbech.

SOUTH BERSTED.—For rebuilding the White Horse, South Bersted, near Bognor. Messrs. Whiteheads, architects and surveyors, 18 South Street, Chichester, and Station Road, Bognor.

TAUNTON.—March 24.—For erection of a sanatorium adjoining the district isolation hospital, Cheddon Road, Taunton, for the Somerset County Council. Mr. A. J. Pictor, A.R.I.B.A., architect, Bruton, Somerset.

THACKLEY.—March 20.—For all trades required in erection of two classrooms at the open-air school, Thackley, for the Bradford Education Committee. The City Architect, Town Hall, Bradford.

WALES.—For the rebuilding of the Plough and Harrow Inn, Bettws, Ammanford, for Mr. E. Evans Bevan, Neath. Mr. C. J. Rees, M.S.A., Parade Chambers, Neath.

WALES.—March 27.—For the following works, for the Glamorgan County Council—viz.: (1) retaining walls and improvements to playgrounds at the Skewen Council School; (2) additions to the Fronwen School in the Ogmore Valley; (3) erection of new school at Evanstown, Gilfach Goch; (4) erection of new school at Hendreforgan, near Gilfach Goch; (5) caretaker's cottage at Porth Intermediate School for Girls; (6) erection of domestic science building at Caerphilly Higher Elementary School; (7) improvements to playground at Rudry School, near Caerphilly; (8) levelling playground and alterations at Craigcefnparc School; (9) alterations to temporary building at Porth Intermediate School; (10) heating chambers at Newtown Council School (Rhymney Valley); (11) playsheds, Pantywaun School, near Panteg; (12) gas installation at the Gelligaer Village Council School; (13) gas installation at the Ogmore Higher Elementary School; (14) alterations to masters' house at Brynna, near Llanharan. The Glamorgan County Hall, Cardiff.

WALES.—March 29.—For erection of new cinema at Hirwain. Mr. J. C. Rees, M.S.A., architect, Parade Chambers, Neath.

WALES.—March 29.—For erection of sixty-one houses at Capel, Llanelly (scheme No. 3), for the Llanelly Corporation. Deposit £5 5*s*. The Borough Surveyor, Town Hall, Llanelly.

WALES.—March 31.—For erection of a Council school at Penygroes (accommodation, 250 infants), for the Carmarthenshire County Council. Deposit £1 1*s*. Mr. W. V. Morgan, A.R.I.B.A., County architect, County Education Offices, Carmarthen.

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WALES.—April 7.—For erection and completion of proposed Council schools at Llandyfrydog and Ty Mawr, and for additions, alterations, and repairs to the Council schools at Pentraeth, Llanfachreth, Llaingoch (Holyhead), and Llechylched (Bryngwran), for the Anglesey Education Committee. Mr. J. Owen, F.R.I.B.A., county architect, Menai Bridge.

WALES.—April 12.—For erection of the Baptist Well Council School, Swansea, for the Swansea Education Committee. Send applications and £10 10*s.* deposit by March 20 to Mr. A. W. Halden, clerk, Education Department, Grove Place, Swansea.

WAVERTREE.—March 22.—For erection of a home for children at Richmond Lodge, Wavertree, for the Guardians of the Township of Toxteth Park. Send applications and £2 2*s.* deposit by March 22 to Mr. W. P. Horsburgh, architect, Central Buildings, North John Street. Liverpool.

WEM.—March 20.—For alterations and additions to Wem National Schools. Send applications and £1 1*s.* deposit by March 20 to Mr. R. Matthews, architect, Parr's Bank Chambers, Nantwich.

TENDERS.

ASHBY.

For the erection of a Council school at Ashby, for the Lindsey County Council.

GILBERT & HALL, Nottingham (*accepted conditionally*)	£5,520	0	0

BARNSLEY.

For the erection of the new town hall in Church Street.

Accepted tenders.

G. Haigh, excavator, bricklayer and mason	£11,180	0	0
C. Smith, carpenter and joiner	3,480	0	0
T. Lindley, concretor and asphalter	2,470	0	0
E. Broley, plumber and glazier	2,440	0	0
G. Dobson, Hunslet. plasterer	1.728	0	0
Higginbotham. Idle. painter	320	0	0
Robinson & Kershaw, Manchester, iron and steel founders	197	10	0
Dawber, Townsley & Co.. slaters	149	10	0

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GRAYS.

For alterations to the administrative block, for the Orsett Joint Hospital Board.

Horsman & Co.	£1,590	0	0
H. J. Carter	1,540	0	0
Brown Bros.	1,534	0	0
W. E. Walsham	1,530	0	0
J. Marrable	1,480	0	0
F. C. Stark	1,406	0	0
G. BROWN (*accepted*)	1,387	0	0

For the erection of a corrugated iron building to be used as a hospital by the War Office, for the Orsett Joint Hospital Board.

G. BROWN, Grays (*accepted*)	£1,484	0	0

IRELAND.

For the erection of seventeen workmen's houses in Westgate and Hill Street, for the Wexford Corporation.

Browne	£3,512	0	0
O'Connor	3,507	0	0
AIDEN REDMOND (*accepted*)	3,043	4	1

For the erection of a new kitchen at Drogheda, for the Guardians.

Gogarty	£630	10	0
Gogarty	592	10	0
Henly	564	0	0
PETER MCCANN (*accepted*)	500	0	0

KIRDFORD-PLAISTOW.

For proposed remodelling of the Council school, for the West Sussex County Council. Mr. H. P. ROBERTS, F.R.I.B.A., architect, Worthing.

Boxall	£829	0	0
Sandell & Sons	765	0	0
Haslett	715	0	0
Ockenden & Son	696	0	0
A. CRANE, Worthing (*accepted*)	583	12	0

LICHFIELD.

For the execution of the Watling Street sewerage scheme at Hammerwick, for the Rural District Council.

MARK WARRINGTON, Hyde, Stockport (*accepted*)	£1,500	0	0

For additions to the Children's Homes, for the Board of Guardians.

J. R. DEACON, Lichfield (*accepted*)	£284	0	0

LONDON.

For supply of penstocks at the North Woolwich pumping station, for the London County Council.

Glenfield & Kennedy	£1,200	0	0
J. Cochrane	1,025	0	0
J. BLAKEBOROUGH & SONS, Brighouse (*accepted*)	900	0	0

NEWCASTLE (STAFFS.).

For erection of a children's receiving home in Thistleberry Avenue, for the Guardians.

TOMPKINSON & BETTELLEY, Longton (*accepted*)	£2,793	0	0

SCOTLAND.

For the various works required in erection of additions at Leith Academy, for the Leith School Board. Mr. GEORGE CRAIG, architect, Leith.

Accepted tenders.

Melrose & Thomson, Albert Street, Edinburgh, mason work.
Jas. Robb, Springfield Street, Leith, joiner, &c., works.
Redpath, Brown & Co., Albion Road, Edinburgh, steel work.
Scott & Davie, Morton Street, Leith, plaster, cement, and tile work.
George Riddell, Constitution Street, Leith, slater work.
A. Y. Howie, Stanley Road, Leith, plumber work.
G. M. Robb, Henderson Row, Edinburgh, painter work.
B. Tomlinson, Argyle Street, Glasgow, heating installation.
H. C. Gilson Heirs, Dock Street, Leith, electric installation.

WALES.

For the electrical installation at the new technical institute, Cathays Park, Cardiff, comprising about 750 points, for the Cardiff City Council. Mr. A. ELLIS, electrical engineer, Cardiff.

Turner & Sons	£3,120	5	10
Northern Electric and General Engineering Co.	3,023	0	0
Price & Co., Ltd.	3,021	10	0
Booth & Bomford	2,969	13	0
Derry & Toms	2.945	0	0
Friend, Wintle & Co.	2,926	15	0
Collings Bishop, Ltd.	2,840	13	0
Buchanan & Curwen	2,797	0	0
H. Soloman (Soloman Bros.)	2,730	1	0
Foote & Milne	2,681	0	0
Alger & Sons	2,461	0	0
H. J. CASH & CO., LTD., Caxton House, Westminster, S.W. (*accepted*)	2,417	0	0

WOKING.

For the provision of an improved purification system at the sewage farm, for the Urban District Council.

HARDY & Co., Woking (*accepted*)	£17,721	0	0

THE Commissioners of his Majesty's Works and Public Buildings state that, with the concurrence of the Constable of the Tower of London, the Bloody Tower will be opened for exhibition to the public daily (except on Sundays, Good Friday, and Christmas Day as from Monday, the 29th inst. A charge of 6*d.* will be made at all times for each person. The opening of the dungeons in the White Tower this spring was also contemplated, but cannot now be effected until the conclusion of the war.

WITH reference to the notice which appeared on p. 116 of *The Architect* of February 5, reporting an invitation to British societies and persons connected with the building and decorative trades to co-operate with similar interests in Russia, for the purpose of holding at Petrograd, after the war, an Anglo-Russian Building Trades and Decorative Arts Exhibition, it is recommended that all communications on the subject for the Russo-British Chamber of Commerce, 4 Gorochovaia, Petrograd, should be sent in the first instance to the Director, Exhibitions Branch of the Board of Trade, India House, Kingsway, London, W.C.

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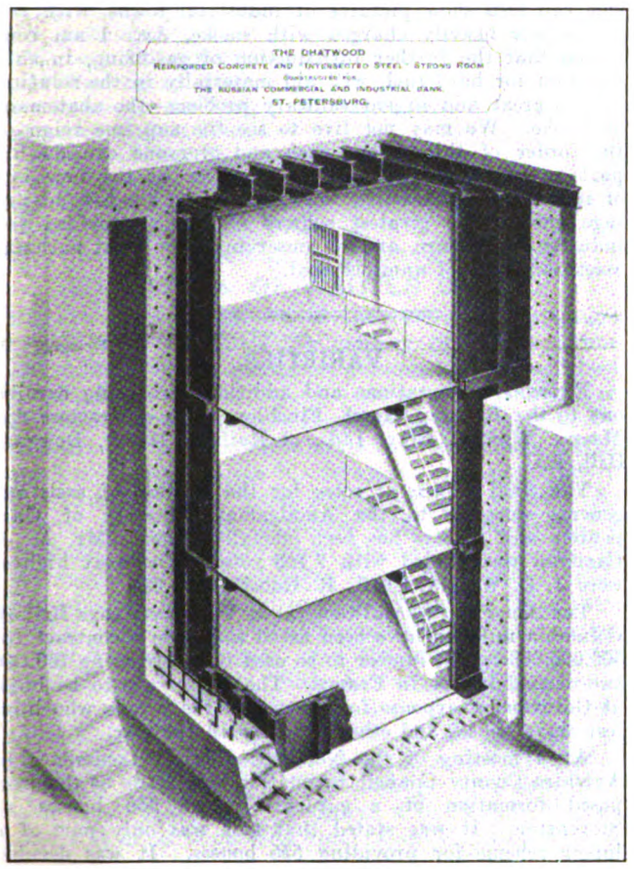
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AN ENGLISH STRONG ROOM IN A PETROGRAD BANK.

IN a recent issue (March 5) we gave an illustrated article on "Neo-Classicism in Russia" and paid particular attention to the premises of the Russian Commercial and Industrial Bank which have been erected in Petrograd from the designs of M. Peretiatkovitch. This building is considered by Russian critics as perhaps the most characteristic of all the latest efforts towards an architectural style adapted for twentieth century needs. This week we are showing a feature of the building which in official eyes is probably of greater importance than any abstract qualities of æsthetics. If a bank building is to be given a human entity we must surely place its heart in the strong room—even though the latter be in its boots, or rather in its basement. Here



we show the very extensive treasury which the Chatwood Safe Co., Ltd., put up in this latest Petrograd bank. The magnificent security work was entrusted to the firm after a keen international contest with the leading Continental makers.

The Treasury is on three floors, and every section is, for double security, lined with slabs two inches thick of Chatwood "intersected" steel. This material was the only one which proved capable of withstanding all the tests that were applied to the productions of the various competitors.

At a time like the present when closer commercial relations are being established with Russia and our other Allies, it is with some satisfaction that we can view the results of the competition in which this English firm was engaged not long prior to the war.

A COMMENCEMENT is about to be made in Newcastle-on-Tyne with the building work in connection with a large scheme of Sutton Model Dwellings. The trustees have let various contracts. The work of clearing the site will be pushed forward with all possible dispatch. The scheme consists of nine blocks of dwellings of the open balcony type, each three storeys in height, the whole providing for twenty-eight three-room, 104 two-room, and three one-room tenements. The buildings are to be of up-to-date construction, all floors and partitions being fire-resisting, and the floors of all living rooms and bedrooms are to be finished in patent jointless flooring with rounded skirtings. The site contains about 2¼ acres, and was chosen by the trustees on the advice of the architect, Mr. Charles S. Errington A.R.I.B.A., of Grainger Street West, Newcastle.

COAL GAS FOR INDUSTRIAL PURPOSES.

THE recent influential deputation to the President of the Board of Trade to consider difficulties of coal transport, as reported in a leading provincial paper, asked "that facilities should be given to free as many wagons as possible for the use of the Metropolitan electrical undertakings and gas companies, so that they should not have to face the possibility of shutting down supplies, plunging London into darkness, and bringing to a standstill the large engineering works which depended upon electric current for their energy."

Another aspect of this important problem was on Wednesday evening put before a meeting at the Royal Society of Arts, that generous home and far-sighted nursery of pioneers who have fought and who still fight for new and improved ideas in applied science and art.

Mr. Horace Moore Thornton dealt on that occasion not with the problem of getting the coal from the mines to the works and to the workers, but of how to make the most effective and economical use of it when we did get it there. And the two problems are in an economic sense inseparably bound up with each other. If a ton of coal can be made to go, say, as far again by an enlightened and modern method as by an unscientific and antiquated method of use, the transport question is at least solved in the same proportion; it is as a matter of fact solved in a greater proportion because the coal is dealt with in such cases in large bulk delivered to a few centres instead of in small quantities delivered to many—transported wholesale shall we say instead of retail. But that is beyond the scope of a short article to do more than touch on. The reader with imagination can fill up the gaps for himself.

But another aspect of economy, perhaps even a bigger one still, and certainly a more permanent one than the transport problem for an industrial nation, was dealt with by the speaker. It was this. The modern method of using coal, by which, of course, he meant converting the crude coal into gaseous fuel in the retorts of the gasworks, and there taking out the otherwise waste tar, ammonia, and other derivatives, instead of making each individual home fireside and factory furnace a dirty, wasteful, and uneffective gasworks in miniature, renders the "waste" products economically valuable. So the thoroughly modern up-to-date community must save twice over. Any given quantity of coal would, heat value for heat value, go farther if scientifically treated than if used in "crude and barbarous" fashion; while the tar, ammonia, sulphur, and so on, instead of passing up the household or factory chimney there to assist in manufacturing fogs, dyeing the lungs of townsfolk grey, spoiling our vegetation, and ruining our buildings, would be conducted as in a giant laboratory to monster "test tubes" and "beakers" there to be prepared and utilised for drugs to make folk well and vigorous, for dyes to paint grey things bluer than the blue sky, for fertilisers for our fields, for dustlaying materials for the surfaces of our motor roads, for priceless and often otherwise unobtainable materials for factories making munitions of war—and, incidentally, ammunition of commerce for the purpose of capturing enemy trade now and in the future. For it is clear that to be able to make money out of "waste" is to automatically lower cost of national production all round; to be able to manufacture at a cost which can compare on at least equal money terms with German goods in the world's markets where "cheap German goods" have become proverbial. Surely if this be a fact, then to use coal as the savage would use the newly captured prey—raw—is, to put it mildly, what a seer many years ago called "a truly barbarous practice."

In his paper on "The Industrial Uses of Coal Gas," a paper packed with hard facts, and illustrated by numerous lantern slides, the speaker proved his case up to the hilt.

Two examples must here suffice: one particular, one general. The following actual figures were quoted. They relate to a firm North of the Tweed, a part of the globe where economy is carried to a fine art. This well-known firm recently installed seven gas furnaces in substitution for hard fuel furnaces, and their testimony is highly interesting. Summarising it:—

1. They save two-thirds of their floor space.
2. They save labour to the extent of dispensing with one stoker.
3. They secure absolute reliability and uniformity of temperature, which is highly essential.
4. They entirely eliminate smoke and soot in their workshops.

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5. Their fuel bill for coal-fired furnaces was for one year £694; the gas consumption for executing the same work was the next year £425—showing a saving in fuel alone of £269 per annum (more than a third).

In view of these advantages it is not surprising to lear that this firm decided to abandon solid fuel entirely; and they now do the whole of their work with gas furnaces, their consumption of gas being nearly eight million cubic feet per annum—as much as is used by a fair-sized country town.

Again treating the question broadly, Mr. Thornton quoted a table showing under what heads from private houses to railways the (roughly) 199 millions of tons of coal per annum are used in the United Kingdom. Under the heading of "Factories" the one with which he was specially dealing, sixty-six million tons, or a third of the whole amount, are used per annum. On this point he said:—

"Without going into detailed calculations, it may be said that the heat now obtained from sixty-six million tons of coal—not the theoretical quantity of heat, but the useful heat under the crude conditions of the combustion of coal—could be realised by means of gas and coke from two-thirds of that quantity of coal if first put through retorts. . . . In addition to air pollution, industry is largely wasting, by its crude methods of heating, parts of the substance of the country which are necessary to this country—more necessary to-day than they have hitherto been, though always valuable since their discovery. I believe I have successfully shown that for economic reasons the coal cast under the boilers of the factory or stoked into the heating furnaces results in a wastage wholly appalling. The question naturally arises, is it practically possible to do away with the waste? Is it possible to do away with the factory chimney? Unhesitatingly (to both questions) I answer in the affirmative. Admittedly custom in industry is a difficult thing to eradicate. Manufacturers, however, are beginning to look upon these matters from a more enlightened point of view than of old. In the mechanical handling of materials in our industrial works, science has long since won way; but it has made way at slower rate with regard to the heating of those materials, whether it be for melting, annealing, hardening, or otherwise. Experience of the new methods—experience satisfactory in every way—is also having weight. In fact, much has already been done in supplanting crude methods of heating by the refinement of gas processes; but that much, my intimate knowledge of possibilities permits me to say, represents only the dawn of a new era in industrial heating."

Gas-boilers for the making of varnish are being rapidly installed in preference to coal-fired boilers, and have proved to be quicker and cheaper for an equivalent amount of work.

The results in one instance were as follows:—

With coal-firing, the time taken was six hours, and a coal consumption of 2½ cwt. at a cost of 1*s.* 4½*d.*

With gas-firing, the time taken was two and a half hours, and with a high-power burner consuming 150 cubic feet per hour, the total consumption was 375 cubic feet. The approximate expenditure was about 8½*d.*, free of all labour cost, with the advantage of an increased production and absolute safety from fire, which is a vital factor in the manufacture of varnishes.

Mr. Thornton concluded as follows: "I hope that the little I have said, and the few illustrations I have shown have sufficed to make it clear to you what a universal servant to man gas is. Our hats, collars, clothes, buttons, socks, and stockings, umbrellas and walking sticks, the making and blacking of boots, the books and newspapers we read, the pens with which we write, the motor-cars in which, or the bicycles on which, we ride—all owe something to gas in their production. Then, again, the stained glass in our churches, the fire extinguishers, the beds in which we sleep—and what is of vast importance to us as a nation, the armaments for our Army and Navy—shells and ammunition, guns, rifles, bayonets, swords—in the manufacture of each and all of these gas is largely used, and of my personal knowledge I know that the enormous output of war material we have received from our manufacturers during the last few months could not have been made so rapidly without the aid of industrial gas appliances, many of which in their present economical, effective form are of comparatively recent introduction. It is, I venture to claim, largely due to the service of industrial gas apparatus that our new Army is in a position to take the field much earlier than otherwise could have been the case. Gas manufacturing is one of our greatest industries; no industry has ever been developed which has been of more service to the public.

"It has been shown in many ways that the use of gas cookers, gas fires, gas water heaters for domestic purposes in our large cities and towns, has been, in addition to many other advantages, accompanied by a marked increase in the number of hours of sunshine enjoyed by the community per annum, and the decrease in the number of dirt-producing and unhealthy fogs. This may be emphasised pictorially by showing a view of part of the roofs of London, among which the dome of St. Paul's is prominent, on an ordinary working day; and by showing the same scene in the early morning in the height of summer, when domestic fires are not required, and before the factory chimneys have commenced their daily output of smoke. One can also show pictures of industrial towns, with the atmosphere heavily charged with smoke, &c. I am convinced that the further introduction of gas-firing, in substitution for hard fuel, will aid materially in the solution of this great and urgent sanitary problem—the abatement of smoke. We may not live to see the supreme reign of this order of things, but each and everyone can do his part in advancing the rate of progress in the new era of industrial gas heating, thus utilising to the best advantage one of the greatest sources of power provided for industry by Nature, and so conserving that great national asset, our stock of unmined coal."

VARIETIES.

EXTENSIVE alterations and additions are being carried out to the Railway Hotel, Finchley. The contractors are Messrs. Wm. F. Blay, Ltd., of Railway House, Dowgate Hill, E.C.

THE final return of votes for the election of assistant general secretary to the Amalgamated Society of Carpenters and Joiners has been officially issued. Mr. A. J. Cameron was elected with 7,165 votes. The next highest were J. L. Wright, 5,942; R. Robertson, 1,298.

THE American Consul-General at Vancouver says British Columbia millmen have been asked to bid on a contract for 500,000,000 feet of lumber to be used in constructing 100,000 two-roomed houses in France. The houses are to be built at Government expense for the use of the people who have lost their houses and other property in the war.

AT a meeting of the Northern District Committee of Ayrshire County Council intimation was made of the proposed formation of a garden city of 536 houses at Stevenston. It was stated that this was only part of a larger scheme for providing 536 houses. It was decided to appoint a committee that the work might go forward as quickly as possible.

THE Medici Society will open at 7 Grafton Street, W., on Monday next, the 22nd inst., an exhibition of photographs of French figure sculpture at Reims and other churches in N.E. France which have been taken by Mr. Arthur Gardner, M.A., F.S.A. No charge is being made for catalogues or admission; visitors are invited to contribute at least as much as the usual fee in aid of the French Wounded Emergency Fund.

AT a recent meeting of the Gateshead Guardians reference was made to the fact that forty years have elapsed since Mr. W. Lister Newcombe, of Newcastle, was first engaged, as an architect, by that authority. Members expressed appreciation of his services and a hope that these might be continued.

AT a cost of £35,000 the Colwyn Bay Urban District Council propose to erect a destructor and an electricity generating station adjoining the L. & N.W. Railway at Bronynant. The provisional contracts have been entered into, and all that is required before commencing the work is the consent of the Local Government Board to borrowing the money. The usual public inquiry was held last week by Mr. F. O. Stanford.

PERMISSION was granted to Messrs. John Brown & Co., Ltd., shipbuilders, Clydebank, at Clydebank Dean of Guild Court on Monday, to erect twenty cottages at Whitecrook. The cottages, which are to house the firm's foremen, are each to consist of three rooms and kitchen, with bathroom and scullery, and are to be built by Mr. John Taylor, builder, Dock Street, Clydebank, at an estimated cost of £7,000.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Saturday, March 27.

Edinburgh Architectural Association: Visit to Edinburgh Ladies' College, Queen Street.

Monday, March 29.

Royal Institute of British Architects: Paper entitled "King's College Hospital," by Mr. William A. Pite, F.R.I.B.A., at 8 P.M.

Royal Society of Arts: Cantor Lecture III., entitled "House Building," by Mr. M. H. Baillie-Scott, at 8 P.M.

Tuesday, March 30.

Architectural Association: Paper entitled "The Changes in the Conception of Artificial Permanent Defence, including those indicated by the present Campaign," by Mr. Hilaire Belloc. Election of Officers for Session 1915-1916, at 8 P.M.

Wednesday, March 31.

Royal Archæological Institute: Paper entitled "Some Irish Religious Houses," by Ian C. Hannah, in the Society of Antiquaries' Apartments, at 4.30 P.M.

THE WORK OF WALTER CRANE.

PERHAPS the best epitome of the part played amongst the artists of the nineteenth century by Walter Crane may be found in the ascription accompanying the Albert Gold Medal of the Society of Arts, awarded to him "in recognition of the services rendered to art and industry by awaking popular interest in decorative art and craftsmanship." For despite his versatility and his industry as a writer in both prose and poetry, a teacher and lecturer, an organiser, a painter and a designer and a craftsman, his influence upon his own and succeeding generations and his usefulness to art have come rather from what he has caused to be produced by other men than by his own personal achievements. Chief amongst his spheres of influence was the foundation of the Art Workers' Guild in 1884, an outgrowth of a little society called "The Fifteen," and of the Arts and Crafts Exhibition Society in 1888. This Society was the outcome of an unsuccessful agitation led by Crane, Holman Hunt, and George Clausen to get up a show that would rival the Royal Academy, with which Walter Crane was never a *persona grata*, spite of his early success, before he was seventeen, in having hung his first picture, "The Lady of Shalott," in the Academy Exhibition of 1862. Despite, too, such pictures as "The Renascence of Venus," "The Fate of Persephone," and the "Europa," it was in other branches of artistic craft that his fame was made.

His acquaintance with Mr. Edmund Evans, the colour printer, led to his designing of coloured picture books, in which his earlier efforts were modified by the influence of some Japanese colour prints, which were given to him by a naval friend who had brought them from the Far East. His picture-books drew general attention to Crane's peculiar gift of design, and brought him numerous commissions from architects and manufacturers. In them he had evolved a new style of dress and household decoration, worked out in detail with striking freshness and fluency. They showed a personality which almost developed into mannerism, so much was the decorator apparent in their treatment rather than the painter. His small gift of colour and lack of passionate impulse tended to determine in his output the limitation of picture painting and the predominance of decorative character.

The three years spent from the age of thirteen as an apprentice to W. J. Linton "to learn the art of drawing on wood for the engravers," by the limitations of its severe discipline also undoubtedly led to his development as a decorator rather than as a painter. From Linton it would appear that Crane learnt more than the art of drawing, for there can be little doubt that it was during his apprenticeship that he imbibed the first ideas of that vague dream of a Socialism which should remedy all the ills of the economics of society which tinged his whole career, and was one link in the bond between himself and William Morris. With Morris one of the earliest causes of his association was the desire of the Socialist-poet-designer to utilise Crane's drawing of the "Goose Girl" in the tapestry for which Morris had set up his loom at Hammersmith and woven the first piece with his own hand.

Thus Crane became a designer for tapestry, and the "Goose Girl" cartoon, worked out for Arras tapestry, proved such a success that it was not only exhibited on the Continent, but became one of the permanent possessions of the Victoria and Albert Museum, where it is now preserved. He had already commenced designing wall-papers, for in 1875 he drew the famous nursery-tale paper for Messrs. Jeffrey & Co., of Islington. In wall-paper design may be found some of his most successful work, for therein his decorative treatment of the figure and his command of line found their full opportunity.

As a writer his book on "The Claims of Decorative Art" appeared in 1892, and added considerably to his reputation. In the winter of that year he was offered the post of Director of Design at the Manchester Municipal School of Art, and for four years, from 1893, he paid monthly visits to the school and delivered lectures, reprinted after careful editing under the title of "The Bases of Design" and "Line and Form." Teaching was not, however, Walter Crane's true vocation, and his books are of more value to students than were his lectures. For a year from July 1898 he was Principal of the reorganised School at South Kensington, henceforth known as the Royal College of Art, but the restraints of officialdom and red-tape made the position impossible for him. As a lecturer he shone more brilliantly on the platform and in private societies, and his headship of the Art Workers' Guild and the Arts and Crafts Exhibition Society, to which we have already referred, was far more fruitful than his official appointments.

On the Continent of Europe his reputation stood remarkably high, especially in Germany and Austria-Hungary. His designs, far more than those of William Morris, influenced very strongly the young Continental artists who, in their search for originality, ran amok with the eccentricities of *l'Art Nouveau*. These men recognised the freshness of the individuality of Walter Crane in decoration, and hence acknowledged that he, at any rate, had made progress on the road which they

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were endeavouring to tread. The same spirit was reflected, though without so much virulence of oddity, in the work that was to be seen in the exhibitions of the Arts and Crafts Exhibition Society, and it has matured, with occasional lapses, into "frightfulness" in modern German architecture of interiors.

In Buda-Pest in 1900 he had an almost royal welcome, when he arrived to supervise a large exhibition of his work in the National Museum, which was followed by subsequent exhibitions all over Europe and America in 1891-2, when the collection was shown in Vienna, in various German cities, and in Turin in 1902.

His Socialism interfered with his appreciation in America, for when he exhibited his collection of designs at the Boston Art Museum, he was not contented with merely showing his drawings but delivered lectures on "Design in relation to use and material," in which he was unable to confine himself to the artistic matter of his subject, but dragged in sympathetic references to the Chicago "martyrs," and by his presence at an anniversary meeting to commemorate the death of the bomb-throwers outraged the feelings of the Bostonians. The stir over his Socialistic views proved, however, an excellent advertisement for his exhibition of designs and pictures and crowds rushed to see it.

It is a little remarkable that Walter Crane's Socialistic views did not prevent his acceptance of the honourable title of Commendatore of the Order of the Royal Crown of Italy, but then it must be remembered that his Socialism was of a very inchoate and indeterminate order, springing from a feeling of impatience with the manner in which his particular form of art was exploited by manufacturers to the benefit of their pockets without real sympathy for art or artist, rather than from any real agreement with the political Socialist or anarchist. His Socialism was dilettante rather than propagandist, though he did on occasions furnish cartoons in favour of the cause, as, for example, when he drew one to commemorate the Trafalgar Square disturbance of 1887, another to celebrate the Mayday Labour Festival, and yet another at the conclusion of peace in South Africa, after a war of which he most strongly disapproved.

An illustration of Walter Crane's conception of Socialism is to be seen in an illuminating little book that purports to be the record of friendly disputes upon art and industry, between Walter Crane and Lewis F. Day. In the course of one of the discussions Crane is maintaining the view that every artist should carry out what he designs and every workman design what he does, the essential principle of the Arts and Crafts movement at its inception, which experience has shown to be, as Day argues, impossible, and has received modification to the extent that the Exhibition Society now has to admit works in defiance of the principle, subject only to the coupling of the names of designer and executant. Crane, getting the worst of the argument, retreats by saying, "That an artist could not maintain his standard of life if he executed all his own designs, is merely an indictment against present economic conditions."

This was, it seems to us, the full extent of Walter Crane's Socialism. All he desired in the reformation of our social and economic system was that matters should be so ordered that the artist should be both designer and executant and still be able to live in comfort. But even Crane is compelled to admit that some crafts, which involve multiple and perhaps heavy labour, may be co-operative rightly.

We need scarcely remind our readers that architecture is one of those crafts.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

THE use of the brush as a drawing instrument is one that is not sufficiently practised, apparently, by our present-day architectural students, despite the penchant for methods of the Ecole des Beaux-Arts in draughtsmanship. When facility has been acquired in its employment, the brush is a most useful tool for rapidly and effectively indicating light and shade, and, therefore, for the representation of carved or intricately moulded forms in any material, but that facility can only be acquired by much and constant practice. Clearly the contributors to our Sketching and Measuring Club have not yet had that practice, for we have received only two specimens of brush-work, and neither is of great nor even moderate excellence. Our contributors have not spent sufficient time on their studies, and they have not made use of those valuable adjuncts to the brush, the sponge and blotting paper.

"Improver" has selected a good subject, an eighteenth century scroll carved in yellow pine, but he has technically transgressed our stipulation for a drawing *in* monochrome by using two colours. The pencil lines are too hard and insistent. In a brush drawing they should be practically invisible in the finished study. The attempt to indicate veining of the wood is unwise. Despite the faults of technique the drawing, however, fairly well expresses the form of the subject.

"Spotus" has chosen the anthemion head of a Greek stele, also an excellent subject, but as in his competitor's case too much reliance is placed upon the pencil line. There is also an untruthfulness in the values of the chiaroscuro, besides the faults we have pointed out as common to the work of both our competitors.

We award a prize of one guinea to each of the two competitors.

The ranks of architectural students have been so much depleted by their honourable enrolment in His Majesty's Forces that we regret to consider it necessary to suspend the work of "The Architect" Students' Sketching and Measuring Club after June next until the return of peace.

NOTES AND COMMENTS.

IN connection with the withdrawal, owing to threatened opposition, of the Parts III. and IV. of the London County Council's General Powers Bill for this session, which attempted to extend the disabilities of low-lying land in London, and to throw upon owners of property the onus of only having such drains as could at all times and under all circumstances be emptied into the existing sewers, it is illuminating to note the result of an action in the High Court brought by William Coleman and Jane Thomas, of Keighley, against the Keighley Corporation. Counsel explained that the plaintiff, Wm. Coleman, was the landlord of certain property in the vicinity of Hardings Lane, Lawkholme Lane, and Bradford Road, Keighley, and Mrs. Jane Thomas was one of his tenants. The action was brought to recover damages alleged to have been done to the property of the plaintiff and the house occupied by Mrs. Thomas owing to the neglect of the Corporation, both in the construction and maintenance of one of their sewers at Keighley. The property in question was built upon an estate which had been developed from time to time since 1895. In that year the Corporation constructed a sewer on the estate, and they ought to have known that they were making a sewer which would be required for a district which was going to be developed and built upon. A sewer ought, therefore, to have been constructed to fulfil the whole of the requisites they ought to have anticipated. In consequence of the alleged neglect of the Corporation, there had been flooding of the plaintiff's property.

Lord Coleridge, in his summing up, said they had to consider the statement, first, that the sewer was not big enough, and, secondly, that it was badly laid. The sewer was made in 1893, and in 1895 none of the houses said to have been damaged by the flooding were constructed. Was the sewer at the time of its construction sufficient for all reasonable anticipations? It was laid in order to drain an area which it was reasonably anticipated would be built upon, although a number of the houses had not been erected, because the Corporation bought part of the area and laid it out as a park. The

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Corporation, however, clearly anticipated that more than the half-dozen houses or so in existence in 1895 would have to be drained, and, therefore, he asked, Was a 15-inch pipe adequate to carry the sewage? Even if it was sufficient for reasonable anticipations, the plaintiffs said that it was not properly laid. On that he observed that it was conceded on all hands that the subsoil was of an exceedingly difficult nature, and a "strut" had to be put in to support the soil.

The jury found that there had been negligence. They awarded £225 to Mr. Coleman, and £40 to Mrs. Thomas. Judgment accordingly.

The report of the examiners of architectural designs in the National Competition for 1914 of the Art Schools of Great Britain, states that the average level of work submitted is scarcely up to that of previous years, and they particularly call attention to the want of thought shown in planning and construction. To us this is not surprising. The best architectural teaching is not now to be found in the art schools of the country, but in the Architectural Association and in the architectural schools of the universities. These have the undivided attention of architects as teachers, and attract all the most capable students. The masters do not have to superintend the studies of picture painters, sculptors, designers of wall-papers, textiles, stained-glass, and many other crafts. We should strongly advise all architectural students not to attend a school of art for any other purpose than that of learning free-hand drawing—free-hand, that is, in the wide—not the special—sense of the term—and never to take a tee-square or a box of instruments within its walls. The ordinary art-master cannot, as a rule, teach architecture.

In his series of lectures on town-planning at Birmingham University, Mr. Barry Parker has now discoursed on "places" and their cognate elements. In doing so he pointed out that the town-planner's chief debt to Camillo Sitte arose from giving a place or open space a complete sense of enclosure, and from his having laid emphasis upon the fact that the town-planner must so plan all his streets as to create street pictures, closing the street picture at suitable points, and never allowing it to run on into bewildering perspective. He went on to consider many suggestions which had been made, with a view to facilitating the distribution of traffic at points at which streets crossed, pointing out the difficulties which it should be anticipated would arise if the gyratory system were adopted, and the limitations of this system He also considered Camillo Sitte's suggestion that, instead of two streets crossing in such a way that each continued its direct line, a street, say, running east and west should not pass straight across one running north and south, but that the traffic going down it should join that going down the one running north and south, and after continuing with it a short distance should then turn out into a street following the east and west direction it wished to pursue, and showed that though this did not minimise the number of points at which vehicles risked a collision (as Camillo Sitte claimed), it did somewhat reduce the actual risks of collision. At the same time, where traffic was dense enough to require police regulation it became disadvantageous, and at best its effect would be to delay traffic going east and west by making it turn two corners when it need not have turned any. He pointed out also that it was a town-planner's business to bear in mind that loss of momentum, as well as of time, to street traffic, meant loss to the community. He drew attention to the fact that the natural assumption that traffic requirements would be facilitated by providing space at the crossing of streets, or at the point on which several streets converged, is more frequently false than true; that its effect is often only to produce confusion which would not have arisen if the space had been kept small enough to keep each line of traffic compact, and following a definite route.

A golden age for art and artists after the war was foreshadowed by Sir William Lever at the annual meeting of the Imperial Arts League, held at Leighton House, London.

"We are a great manufacturing, a great scientific, and a great governing nation, but who can say we are a great artistic nation?" said Sir William. "And if we are to become one, art must be brought down to the masses. Art to-day was just in the same position as in the bygone ages when the Church was practically its only patron. The man who suggested putting up an art gallery in a village, or even in a town of 100,000 people, would be regarded as a crank; but the moment it was suggested to substitute gas for oil under similar circumstances, or electricity for gas, it was done, because science, unlike art, had been brought down to the people. But when the war is over we are going to have a good time for art. Beautiful reproductions are bringing fine pictures by the greatest artists in the world within the reach of the people. It is only by placing these reproductions in every home that a sentiment in favour of art can be created throughout the country, and this is a work which I think the Imperial Arts League might very well take up."

The works of artists should be purchased, he suggested, the reproductions placed in the homes of the people, and the originals hung on the walls of the local picture galleries.

The view that the end of the war will bring a new and prosperous era for art and artists is shared by many leading members of the art world who were present at the meeting, the theory of the artists being that the war in abolishing distinctions of class has prepared the way for a great movement for the democratisation of art.

The Victoria and Albert Museum has lately received on loan from the rector and churchwardens of one of the City churches, St. Augustine with St. Faith, Old Change, a splendid array of silver-gilt plate, which has been placed on exhibition in the Loan Court, Room 40. It comprises two groups, representing the two old parishes now united in a single benefice, and includes no fewer than seven flagons of varying sizes, three Communion cups with their paten-covers, and a few minor objects. Of the principal pieces one, a Communion cup, is of the reign of Elizabeth, and the others range over the reigns of James I., Charles I., and Charles II.

The distinction between Mote, Castle, and Peel has been well elucidated by Mr. George Neilson, LL.D., in a lecture to the members of the Edinburgh Architectural Association. The lecturer dealt first with the chronology and character of the motes, and the development from them of the castles, which as centres of royal authority and administration, and sometimes as powerful fortresses, played so large a part in the institutional history of Scotland. In law the shadow of the mote fell long over the landscape after the rough justice administered there had ceased to respond to advancing civilisation. Popular memory associated the motes almost wholly with this last phase of their use, and had allowed their earlier military connection as the homesteads of the early feudal lords to pass into an oblivion from which modern research has gradually recovered their early purpose and something at least of their significance. Contrasting in all respects with the motes, yet interconnected with them through the castles, were the peels, which first came into Scotland as an expedient of Edward I. to add to the accommodation and strengthen the outworks of certain castles, which apparently had been allowed to fall into a weak condition. Lochmaben, Dumfries, Linlithgow, and Selkirk had been thus reinforced and extended by constructing peels about them. Generally the peel was originally an entrenched and palisaded circuit or forework generally of an existing castle, but frequently an independent enclosure, formed by trenches and strengthened and heightened with stakes, "bretasches," and occasionally even towers of timber. The record of some of those fortifications give a very high impression of their effec-

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tiveness. An instance was, on the Cumberland side of the Border, the peel of Liddel, which had once also been the mote of Liddel. It was the scene of energetic attack and defence in 1346, when King David II., after a hard struggle, was successful in its capture from Walter of Selby.

WAR ITEMS.

THE following has been received at the Commercial Intelligence Branch of the Board of Trade, from the office of His Majesty's Trade Commissioner for Canada, under date February 25:—

"The financial situation has improved to some extent, and has brought about a general improvement in business. Although this improvement emanates primarily from the rural centres, the influence of war orders in industry is also apparent.

"It is somewhat difficult to generalise with regard to collections, but from all reports and opinions available, although the improvement so far noted seems small, the consensus of opinion is that in the next few months collections will improve, owing to the growing prosperity of the agricultural community.

"Commercial failures for January have been heavy, which would point to the fact that a great many of the smaller firms who were existing on speculative lines are being ousted from the market.

"The wholesale dry goods merchants consider the present situation encouraging, as the outlook contains many bright features. Stocks in the retail stores are moderate, and a good spring business is anticipated. Retail merchants have been buying conservatively for some considerable time, and the winter sales have been brisk enough to deplete the stocks sufficiently to allow of considerable spring buying. It is stated by leading authorities in the trade, that conditions in the rural districts are generally better than in the cities.

"In the grocery trade the reports are that the situation is not far from normal, and great confidence is felt that the spring business will be satisfactory. Although several lines have advanced considerably in price, they seem to be selling more freely than previously.

"The wholesale hardware trade appears to be picking up gradually, and should soon be on a normal basis; a pronounced activity in lines of this nature is expected to be felt towards the beginning of next month (March).

"Many business men are of the opinion that there will be considerable activity in the building trade throughout the Dominion in the coming Spring.

"Generally speaking, the situation in the markets of the Dominion is improving, and British manufacturers who are desirous of retaining their hold, as well as those who are desirous of introducing their manufactures, should take advantage of the present position in order to become firmly established, so that when commercial activity generally assumes a more normal basis they will be strongly fortified and well able to meet their competitors."

In connection with the campaign undertaken by the Board of Trade on the advice of their advisory committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of enquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these enquiries, and list 12 of articles which enquirers desire to purchase is now ready, and may be obtained by United Kingdom manufacturers and traders.

British firms interested, as suppliers, in any of the goods mentioned, should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

ARCHITECT'S AUTHORITY TO EMPLOY QUANTITY SURVEYOR.

IN the King's Bench Division on Thursday, March 18, Mr. Justice Darling, sitting by agreement without a jury, heard an action raising the question of whether an accredited architect has an implied authority from the building owner to employ a quantity surveyor when tenders are being invited.

The plaintiff in the case was Mr. E. E. Richardson, quantity surveyor, of Sylvan Avenue, Mill Hill, and he claimed £281 from Mr. F. T. Pillivant, of Bath Street, City Road, as fees for services rendered. Some time ago Mr. Pillivant, who is a cardboard box manufacturer, wanted to erect a larger factory and his architect engaged the plaintiff when tenders were to be invited. It was arranged between plaintiff and the architect that Mr. Richardson was to be paid 2½ per cent. on the lowest tender, which was for £10,900.

Mr. Pillivant, in his defence, put in a letter he wrote to his architect expressly stipulating that no expense was to be incurred without written authority. The proposed building was not carried out, and defendant contended that his architect had no authority to engage a quantity surveyor.

Plaintiff, on the other hand, submitted that an accredited architect had the right to employ a quantity surveyor, and that in this case there was implied authority to do so. This, he said, was recognised in the profession.

Mr. Justice Darling, however, gave judgment for the defendant, with costs, remarking that if the case should go to the Court of Appeal and his decision be reversed the plaintiff was only entitled to recover £178 17*s*.

ILLUSTRATIONS.

HASCOMBE COURT.

THE garden front of the house is built of oak half-timbered work, with thin brick nogging in patterns, on a Bargate stone base, and with a roof of old tiles. The entrance front is built entirely of Bargate stone from a local quarry. The builders were Messrs. Mussellwhite & Sapp, Basingstoke, and the architect is Mr. John Coleridge, Licentiate R.I.B.A.

"ASHLING," HAMPSTEAD GARDEN SUBURB.

THIS is a specimen of modern suburban architecture in the Hampstead Garden Suburb. Mr. E. Guy Dawber, F.R.I.B.A., was the architect.

AMBULATORY OF CHOIR, WESTMINSTER ABBEY.

THIS drawing was made by Mr. Chas. S. Carter, the holder of "The Architect" Travelling Studentship for 1914.

COMPETITION NEWS.

LIVERPOOL.—A special meeting of the Liverpool Housing Committee was held on Tuesday, to inspect the competitive drawings received for the artisans' dwellings to be erected on the Rathbone Street area. Mr. Henry Hartley, the assessor, in his report, stated that eighty-seven complete drawings and one unfinished drawing were submitted. The task of selection had been difficult, owing to the high standard of merit of many of the designs. In considering them he had kept before him five important factors: (1) The most favourable laying out of the buildings on the site so as to secure good ventilation, sunlight, and control of the streets, houses, tenements and recreation ground; (2) the detail plans both of tenements and self-contained houses so as to secure the best sanitary conditions, together with the favourable and economical laying out of floor space and the comfort and convenience of the occupants; (3) well-designed elevations so as to obtain as picturesque a scheme as possible while at the same time bearing in mind economy; (4) the laying out of the site and the construction of the building so as to comply with the requirements of the bylaws; and (5) cost. Many of the designs submitted were practically based on dwellings already erected by the committee in various areas in the city. (1) Design 54, Messrs. Biram & Fletcher, St. Helens; (2) design 63, Mr. F. E. G. Badger, Liverpool; (3) design 79, Messrs. Halliday & Paterson and C. Gustave Agate, joint architects, Manchester.

WHITEHAVEN.—Members and Licentiates of the R.I.B.A. are advised that the conditions of the Whitehaven Housing Competition are not in accordance with the Institute Regulations for Architectural Competitions, and the Competitions Committee are in correspondence with the promoters with a view to their amendment

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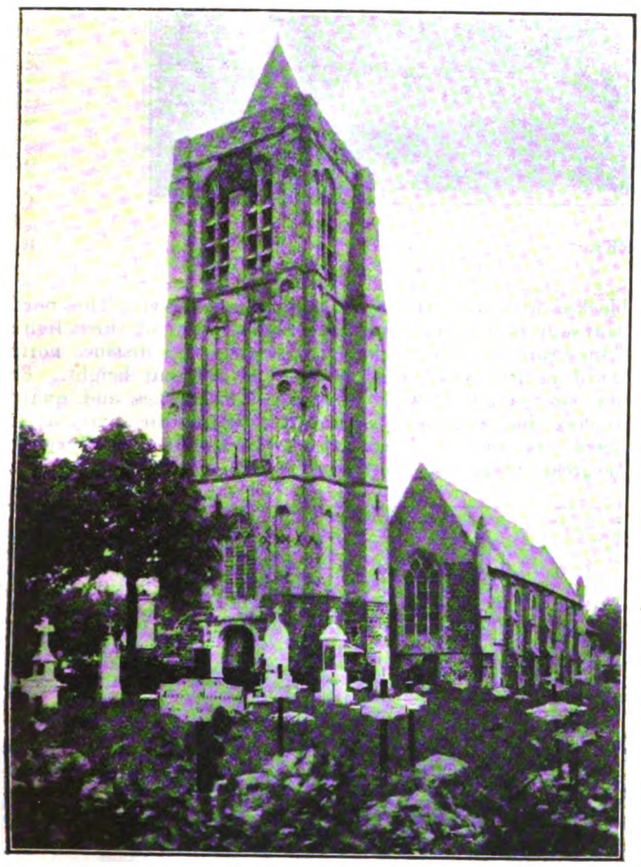
VILLAGE CHURCHES ROUND YPRES.

By John A. Randolph.

The sorely-stricken district round Ypres has a considerable number of churches of great artistic merit, and a few of them of an architectural type which one would expect to find in towns of some importance, their steeples being of great beauty and dignity. This is especially the case with Boesinghe, while as regards towers, Vlamertinghe is as good an example of boldness and individuality as one would wish to see, with a small spire on a slender octagonal base above the parapet.

We have, indeed, heard it stated that Boesinghe is the best example in Flanders.

For the purposes of these brief notes it is necessary to go so far afield as Rumbeke, near Roulers, where the spire type still holds good, while the Poperinghe example will not be included, owing to its being a town of some importance, though it contains a remarkable example of a large ornate Gothic church in yellow brick with a tower and spire



WOESTEN.

of the same, admirably proportioned to the church, of at least 180 feet in height.

The steeple was illustrated in our article, "The Call of Belgium," in the issue of June 26, 1914.

Our field will be seen to extend to Warneton, near Comines, on the south, east to Rumbeke, north to Eessen and Cortemarck, near Thourout, and west to Vlamertinghe.

We will take them in the following order: north, east, south, and west. As we mentioned in the article above referred to, the tower of Cortemarck, the sole remnant of the old church, is of the Flemish type of solid pattern, slightly ornamented with blind tracery panels on the stages and buttresses, with a low conical roof. Poor as the carpenter's Gothic church attached to it is, the ensemble as seen from the railway is effective, and the irregular wide street and small square leading up to it from the station are not without a certain charm, especially the square, which has a cluster of trees in a large triangular space in one corner, fenced in with plain iron railings, and partly hiding the entrance to the church.

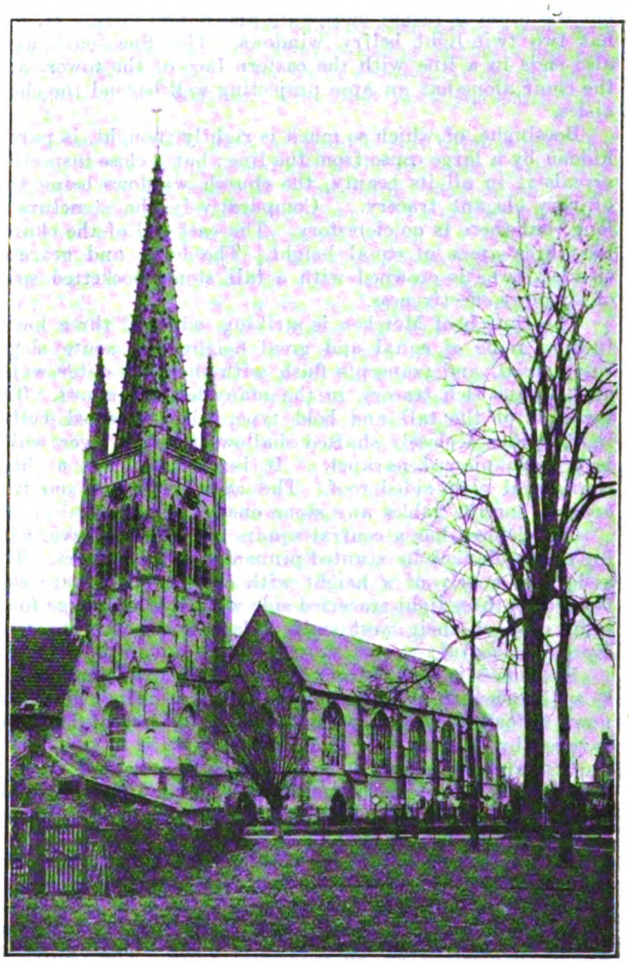
On a great scale as these brick towers are when attached to comparatively small churches, it would be a great and unpardonable oversight—as we extend our field to Rumbeke—to fail to draw attention to the giant of village churches north of Ypres, and possibly in all Flanders, that of Eessen, a few kilometres east of Dixmude.

It is an immense brick church, standing close to the railway line and about a quarter of a mile from Eessen Station, so one obtains an unobstructed view of the wonderful pile at close quarters. It is on most generous lines and of stately dignity and splendid proportions, of great height, with bold, traceried windows, and its west tower outvieing in height and solid appearance all the wonderful towers we describe below. The low roof to the tower is just sufficient as a finish to the whole. The stages of the tower and massive buttresses are panelled with shallow blind tracery, as elsewhere in Flanders, and the belfry lights are the usual twin-traceried ones.

It is devoutly to be hoped this sumptuous church has escaped damage at the hands of the enemy, though it is perilously near devastated Dixmude.*

Standen tower, of brick, with crocketted stone spire, and with straight-topped walls at the west ends of the aisles, with sloping-back roofs, stands at a few yards down a narrow street, from the railway station, and is octagonal, from a square base, which is unusual for a west tower in Flanders, though Adegem, between Eecloo and Bruges, is a small Romanesque one on a square base, but placed at the east end of that fairly large Renaissance church.

Woesten is another striking example of a lofty, well-buttressed, massive tower of such a size, as is often the case in this part of Belgium, as to almost dwarf the church of which it is a part. It will be observed that these solid towers are, as a rule, almost devoid of windows below the belfry lights, and that seldom those lights have tracery in them, generally of two divisions when they do occur, and that there are sometimes three together on two of the tower faces and two on the other ones. This is noticeable, for instance, at Vlamertinghe and Zillebeke. The church



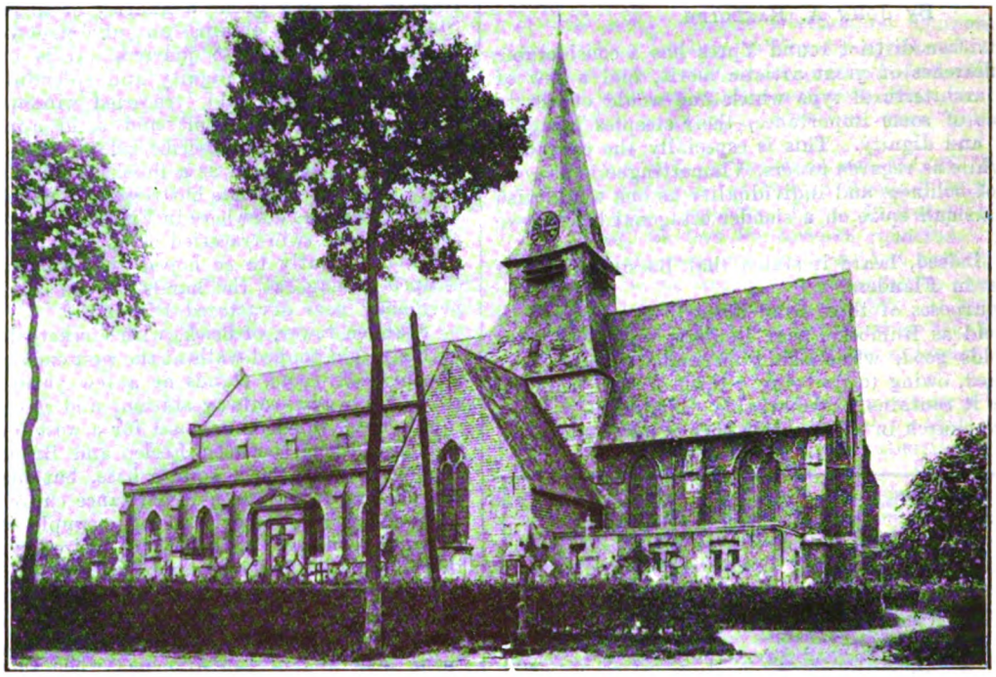
BOESINGH

of Woesten is without transepts, the aisles having western gables, which do not come beyond the east face of the tower. The long belfry lights are double on three faces, the staircase turret on the south side preventing more than a single twin-light one.

Elverdinghe is very similar to Boesinghe, which follows,

* Since writing those particulars of Eessen, we learn that its Curé has been shot, and 40 churches round Dixmude destroyed or damaged.

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HOLLEBEKE.

but the tower is rather more solid and not so lofty. It, too, has two twin-light belfry windows. The fine south aisle also ends in a line with the eastern face of the tower, and the choir alone has an apse projecting well beyond the choir aisles.

Boesinghe, of which so much is rightly thought, is partly hidden by a large copse from the line; but a close inspection reveals it in all its beauty, the church windows being full of very elegant tracery. Comparatively the structure is long, but there is no clerestory. The east end of the church has three apses of equal height. The lofty and graceful slender tower is crowned with a tall stone crocketted spire of singular effectiveness.

The church of Mercken is striking, with all three longitudinal roofs of equal and great height and acute slope, three-apsed, and transepts flush with the aisle outer walls, and elegant rich tracery in the many large windows. The tower is of the tall and bold type, with traceried belfry lights under a closely shafted shallow arcading, over which is a poor pierced parapet. It is crowned by a high equilateral eight-sided roof. The apse roofs have no iron crosses, nor the gables any stone ones.

Oostvleteren has a central square tower to the nave, with high spire flanked by stunted pinnacles at the corners. The aisles are nearly of a height with the nave, and are well lighted by three-light traceried side windows, and large four-light ones at their west ends. The screen once stood in Ypres Cathedral.

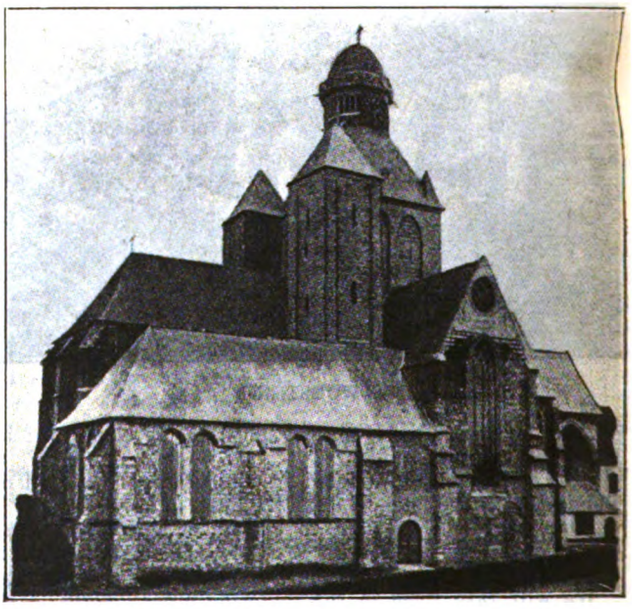
Bixchoote is away from the line, and we were unable to see it when in this part of the country. The village has now, unfortunately, a place in the long list of localities ravaged by the foe.

Oostcappelle has hitherto, apparently, escaped such a fate, unless it was the unnamed one in the *Daily Graphic* of December 30, 1914, though perhaps the distinction of anonymity belongs to Bixschoote.

Langemarck also calls for some notice; it is rather later than the other examples, and has no parapet or pinnacles to break the abrupt finish of the tower, which is surmounted by a slightly-bulbed construction, from the corniced top of which curiously rises an octagonal spire. The church is plain Renaissance and without aisles.

The steeple at Hollebeke is central and curiously shaped, the shingle covering of its base rising in gradually sloping lines from level with the top of the transept roof to the wide and low belfry openings, and crowned with a broach spire. The effect is charming, but not at all Flemish. The nave and aisles have been restored.

At Messines a large portion of the old part Romanesque, part Gothic Abbey Church, now parochial, remains. Its choir aisles are lighted by long double lancets, and part of the nave exists, with twin-light traceried windows; two blocked arches of the south side are exposed. The north transept has a very long traceried window of three lights. This transept is remarkable as having two distinct northward gables, with roofs behind, of different height. The low square tower, with three shallow arcades and quaint roofing, has a graceful square and lofty stair turret at its north-east corner. There are some beautiful wood carvings of great interest in the church.* The nearest station is at



MESSINES.

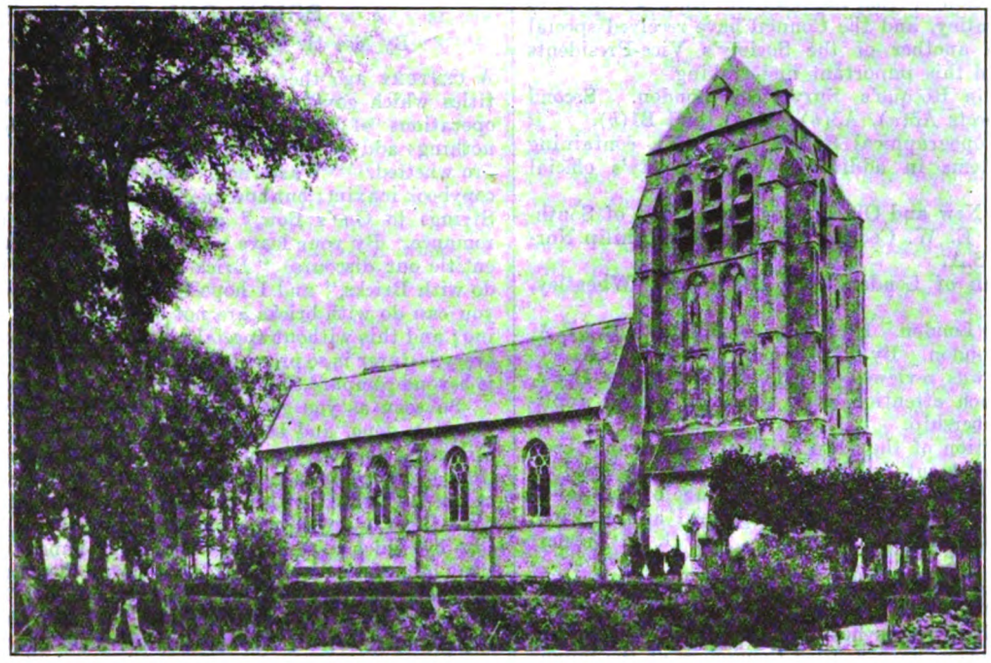
Warneton, between Ypres and Comines, where there also was an abbey. The church there is long and low and uninteresting, though the tower has some claim to distinction.

On the frontier, at Le Touquet, the first Belgian station between Comines and Ypres coming from Armentières, there is a tiny church with dainty little tower and low spire or high roof.

On another line from Ypres, on the way to Bailleul, is Kemmel, near the renowned Trappists' Monastery of Kastberg. The church is a bold, broad-windowed, three-apsed,

* The church, we now learn, has been practically gutted and the belfry destroyed, the tower walls, though still standing, having big holes in it from the recent bombardment.

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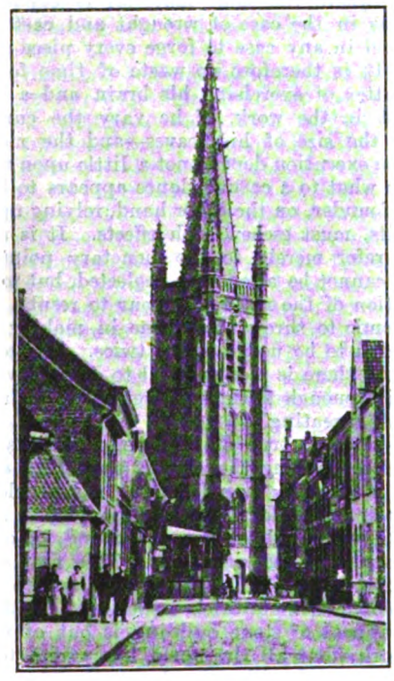


ZILLEBEKE

high-roofed building, with fairly low early west tower surmounted by a conical roof. Some of the windows of the apses are blocked up flush with the glass line, leaving the exterior moulding visible. The buttresses are severely simple, and occur with measured regularity all round the church. The windows have no tracery.

Another bold tower, without a spire, is to be seen at Locre, also near Bailleul, with four lofty pinnacles at the corners and two twin-light belfry windows on each face. Patterns are outlined in contrasting brick on one of the sides. The church, however, is wretched.

Westoutre has a Gothic nave and Renaissance choir, the nave lighted by its lofty aisles' huge traceryless windows



RUMBEKE.

(with the exception of their western ones). The curious tower has a low octagonal story above the square portion, with a smaller low octagon superimposed and a conical roof.

Eastwards of Ypres there are several churches worthy of note—at Moorslede, a very long cruciform building with two-bay choir aisles of the same height as the nave and apsed choir, and half as long as the choir. The belfry lights are long, and there is a broach spire, which might have been a little higher for effectiveness. The neighbouring village of Passchendaele, on the other side of the line and served by the same station (bearing the hyphened names of the two places), has a good church, with nave, aisles, and steeple restored, but the straight-ended chancel and the transept are original. The north transept is on the same plan as that of Messines. The tower is on the south side, over the transept.

Becelaere steeple, with a gigantic west window over the door under a deeply-moulded arch, is remarkably like Rumbeke, but the spire is, if anything, sharper still; the corner turrets, too, are very happy. The church has been enlarged by a south aisle in recent years.

Zillebeke, with which we associate pleasant memories, is picturesquely surrounded by fine trees, and the ground is undulating. The view shows the impressive tower, with triple belfry light, and an interesting church attached. It has a large tenth-century font bearing ornate carved foliations all round the bowl and on the helmet-like cover.

At Reninghelst is a long and transeptless building of nave and aisles and apsed aisles to the choir, all of the same height. The large windows are all three-light, with good tracery. Two twin-light belfry windows, under shallow arches, are on each face of the low square tower, which has an equilateral roof, square in plan.

Rumbeke has special attention directed to it in Baedeker's "Belgium," and is well worthy of it. The tower and spire are of admirable proportions, though the belfry windows are of exaggerated length, and the church interior is wide, with tall cylindrical columns bearing elegant capitals. The openwork screen, in Gothic, is modern, but might have been better. On the south side of the tower is a staircase turret with stone lean-to top, the sides of the slope being crocketted up the ridges. There are traces of the original—early—church in the present building.

LONDON TOPOGRAPHICAL SOCIETY.

The annual general meeting of the above Society was held in the Rooms of the Society of Antiquaries, Burlington House, W., on Tuesday, March 23.

According to the fifteenth report of the Council, covering the years 1913-14, the following publications have been issued to the members for the year 1913:—

1. A series of Seven Drawings of London Bridge, by E. W. Cooke, R.A., being reproductions of the original drawings in the Guildhall Library, reproduced by courteous permission of the Right Hon. the Lord Mayor. In continuation of the series for which a special portfolio has been provided.

2. John Rocque's Survey of London, 1746. A Plan of the Cities of London and Westminster and Borough of Southwark, from an actual survey taken by John Rocque, Land Surveyor, and engraved by John Pine, Bluemantle Pursuivant at Arms, 1737-46. First instalment. Sheets A1(*a*), A1(*b*), A2(*a*), and A2(*b*).

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The reproduction is from the beautiful copy belonging to Dr. H. B. Wheatley, and the Council have received special assistance from another of the Society's Vice-Presidents (Lord Welby) in this important undertaking.

1914.—1. John Rocque's Survey of London. Second instalment. Sheets A3(*a*), A3(*b*), B1(*a*), and B1(*b*).

2. London Topographical Record, Vol. IX., containing the following items in addition to the Society's official reports, &c.

Drawings of New and Old London Bridge and of Southwark Bridge, by E. W. Cooke, R.A. Notes by Philip Norman, LL.D. F.S.A.

Rocque's Plan of London. By Henry B. Wheatley, D.C.L., F.S.A.

Disappearing London. By Walter A. Spiers, A.R.I.B.A.

Blake and London. By T. Fairman Ordish, F.S.A.

This volume was reviewed very favourably in the Press, and attracted such attention as to result in several applications for membership.

The reproduction of the Map of Ebury Manor has been successfully carried out, but the issue has been delayed in order that members may have the advantage of the paleographical assistance necessary for its general appreciation, which will be afforded by the Editor, Mr. G. J. Turner, F.S.A.

The numbers of the Society are well maintained, there being at present 229 members on the roll.

The sale of back issues has been extremely satisfactory, and certain members have availed themselves of the opportunity to acquire entire sets of the Society's works. So great has been the demand in the case of some of the Society's publications that the stock is almost exhausted, and an early application is recommended on the part of those desiring to complete their collection.

The following publications are in preparation for issue in the current year:—

A further instalment of Rocque's Map, comprising eight sheets.

The Map of Ebury Manor.

London Topographical Record, Vol. X.

The Secretary having volunteered for active service, the duties of the office have been discharged in his absence by Mr. J. G. Head, F.S.I. It will be of interest to members to know that the Secretary has received promotion to the rank of Captain, and that he has proceeded to the Front with his regiment.

The above report was approved and adopted on the motion of Mr. H. Gordon Selfridge, seconded by Mr. E. W. Rushword, F.S.I.

The full list of the Council and officers elected at this meeting is as follows:—

President.—The Earl of Rosebery, K.G.

Vice-Presidents.—Lord Welby of Allington, G.C.B., H. B. Wheatley, LL.D., F.S.A., Sir Laurence Gomme, F.S.A., Lord Belhaven and Stenton, Philip Norman, LL.D., V.P.S.A., Viscount Dillon, V.P.S.A., Hon. M.A. Oxon, T. Fairman Ordish, F.S.A., and Professor W. R. Lethaby, F.S.A., F.R.I.B.A.

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Lord Welby of Allington, G.C.B. (Vice-President), who was in the chair, gave a short address in which he suggested the Society might, when occasion offered, transfer their attention from the centre of London to Greater London.

Mr. C. L. Kingsford, F.S.A., followed with an account of some of the principal buildings shown in Visscher's and Hollar's seventeenth-century views of London.

THE Birmingham Architectural Association held a meeting at the gallery of the Birmingham Society of Artists on the 19th inst., when a paper descriptive of their annual excursion last year to Chartres was delivered by Mr. Francis Goldsborough. The lecture was illustrated by lantern slides, and, in addition, there were exhibited a number of paintings and drawings, by members of the Association, of buildings and places of interest visited.

BRICK BUILDINGS.*

By Mr. H. M. FLETCHER, M.A., F.R.I.B.A.

A CENTURY ago there was a pleasant vogue for subsidiary titles which gave an air of importance even to the minor operations of authorship. "Rosamund" by herself is nothing; add or "The Purple Jar," and your anticipations are whetted. "Waste not, Want not," by itself is a mere copybook maxim; but add another of the same sort, or "Two Strings to One's Bow," and you have the making of a romance. By your leave we will revert to this fashion and entitle our discourse "Brick Buildings, or What You can do with Bricks," and I hope to prove to you that the things you can do with bricks are not only numerous, but interesting; and this without special pleading or the pretence which every lecturer is so prone to put forward, that his own subject is beyond compare the most fruitful of all possible subjects.

So soon as you get beyond the mere enjoyment of what has been done, and begin to rationalise your enjoyment by analysing how it has been done, you are bound to admit that bricklaying is a lower craft than masonry. For instance, I doubt if within the legitimate possibilities of brickwork there is anything so entrancing as the perfectly simple feat by which a mason gets the inner handrail of a turret stair out of the same block of stone as the step—a problem the mere statement of which takes you into a higher region of geometry and imagination than you enter in any discussion of brickwork. The variety of form which the mason attains, *en passant* as it were, as a by-product of the natural process of shaping and cutting away superfluities from the roughly quarried block is accomplished by the bricklayer only as a *tour de force*, involving either an infinity of different moulds, or the carving of a substance which, consisting of small units connected by joints of another material, is essentially ill-suited to carving.

I do not mean that richness of effect is unattainable in brickwork—the use of one's eyes would soon disprove that, not to speak of the examples I hope to show you—but it must be sought carefully within the natural limits of the material with no attempted rivalry of the different richness of stone building. The first and most important—all-important perhaps—of these limits is this, that bricks are made in moulds. Now the essence of moulded work is repetition, as the essence of hand work is variation. This can be *seen* most clearly where the same material is capable of both treatments, as in the case of wrought and cast iron. The smith is bound in any case to forge every piece of his work separately. It is therefore no waste of time for him, but merely a matter of exercising his brain and a sign of his vital interest in the work, if he vary the curves of his scrolls, and the size of his leaves—and the richness and sparkle of the execution depend not a little upon these subtle differences in what to a casual glance appears to be repeated units. The founder, on the other hand, relying upon moulds for his results, must eschew such effects. It is uneconomic—I do not refer merely to the monetary point of view, though that cannot be altogether neglected, but to the really central question of the ratio of labour to results achieved—it is uneconomic to throw away time in making a number of moulds, each to be used once or twice. His brain comes into play, and there is plenty for it to do in devising units of pattern rich enough to interest, yet not so rich that their repetition is nauseating.

The very same is true of brickwork. Bricks are burnt clay, but before burning the clay is shaped in a mould or box, and it is an easy step from the plain oblong box in which the ordinary building brick is moulded to a box with one or two sides splayed, or a rounded end, or one side indented to form a raised ornament. This first step taken, the rest follows, and there is hardly any limit to the variety and richness of legitimate brick treatment. If the supreme intellectual appeal of stone building is out of reach there is in brickwork what all the world has agreed to recognise as an intimacy, a familiar touch, coming home to men's business and bosoms, that adapts it especially to every day use. To us who are lovers of London and dwellers in the clays of the Thames valley brick must always appear the natural building material to be departed from only for due reason given.

"O the old wall here!" says Browning; "how I could pass
Life in a long midsummer day,
My feet confined to a plot of grass,
My eyes from a wall not once away!"

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* A Lecture delivered at Carpenters' Hall.

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And an excellent occupation too, if it was a wall of the right kind. I regret to say that after these admirable sentiments the poet continues:

"And lush and lithe do the creepers clothe
Yon wall I watch, with a wealth of green;
Its bald red bricks draped, nothing loth,
In lappets of tangle they laugh between."

Which is precisely in the manner of the client who tactfully remarks to his architect when the house is finished: "Do you know I think it really won't look half bad when we have covered it with creepers." "Lappets of tangle," indeed!

But I am sure, from the way he speaks about it, that the wall he had in mind was a plain brick wall. And this leads us to reflect that after all richness of detail is not the first preoccupation of the brick builder, and that the primary use of bricks, from the days of Balbus to our own, is to build walls. Indeed, his only chance of expressing sublimity, a quality rarely attempted in England, but perfectly attainable in brickwork, is to refrain from detail and concentrate on mass, or height, or extent of surface interrupted by as few openings or trivialities as may be—in a word, on greatness of scale. I shall show you presently the surprising cathedral of Albi in the south of France, and those of you who know the brick fortress walls of Siena or Montreuil-sur-Mer, the belfry towers of the Low Countries, or the huge bare brick churches of St. Domenico at Siena, the Frau at Venice, and the like will appreciate what I mean, and how the sense of great scale is accentuated by the smallness of the individual bricks. Mr. Belloc, speaking of the belfry at Delft, says admirably: "Its height is enhanced by something which you will not see, save in the Low Countries between the hills of Ardennes and the yellow seas. I mean brick Gothic, for the Gothic which you and I know is built up of stone, and, even so, produces every effect of depth and distance; but the Gothic of the Netherlands is often built curiously of bricks, and the bricks are so thin that it needs a whole host of them in an infinity of fine lines to cover a hundred feet of wall. They fill the blank spaces with their repeated detail; they make the style (which even in stone is full of chances and particular corners) most intricate, and—if one may use so exaggerated a metaphor—'populous.' Above all, they lead the eye up and up, making a comparison and a measure of their tiny bands until the domination of a buttress or a tower is exaggerated to the enormous."

The only comment I would make upon this is that it is hardly accurate to confine brick Gothic to the Low Countries. There is East Anglia, to begin with, and if you point to the Flemish influence there, undoubtedly strong, and claim it as an extension of the Low Countries, separated by the mere accident of the Channel, still it has a strong local flavour of its own, different from that of Belgium and Holland, so that if overnight you joined an aeroplane raid from Bruges and dropped down in Lynn or Boston, the most Flemish of English towns, you would know in a moment that you had reached another country. And, further, there are at least two districts to which I have already referred where brick was the natural building material from Gothic times and earlier, and where it was used on a scale even transcending that of the Netherlands—the region about Toulouse and Albi in the south-west of France and the great North Italian plain of Lombardy and the Veneto.

To return to the subject of walls. "How monotonous," you may say. I have said that we in England are too much afraid of the bare plain spaces, unencumbered by detail, without which no building can lay claim to the quality of greatness. "They must be so monotonous," we say. Well, in the first place, monotony, if it is big enough, is far less dull than prettiness, and, in the second, why be monotonous? Strictly and etymologically speaking, "monotonous" means "one-toned," and that is at the root of the matter. For years our specifications contained a clause that the facing bricks should be "specially picked for uniformity of colour," that is, should be one-toned or monotonous, and no doubt many of them contain it still. It sounds like asking for trouble, does it not? when you put it that way. In matters of taste it is risky to condemn any practice dogmatically, for so sure as you have done so along comes the Gainsborough who paints you the blue picture, or otherwise breaks the very rule you have just laid down; but it is pretty safe to say that the labour put into that special picking was worse than thrown away, was positively injurious, and that all those slabs of raw harsh colour might have been rendered soft and harmonious by using the bricks just as they came out of the kiln, with all the perceptible and imperceptible gradations of tone conferred upon them by the accidents of burning. Your great bare spaces will be full of variety and interest, of what painters call "quality," but without prejudice to breadth of treatment, because the smallness of the individual bricks distributes the variation of colour so subtly over the whole surface that only those who are "in the know" can realise how it has come about. And, of course, the larger the surface the wider the diversity of colour that can be introduced without disturbing the general tone. I have often heard people, looking at a new wall built with this natural diversity of colour, exclaim with delight, "Why, it looks old already!" To which, of course, the only correct reply is, "No, it doesn't." There is no affectation or fake of antiquity about it, but it looks soft, and looks right. The fact is that this special picking dodge has so far warped our judgment that we have come to think of soft colour as a boon which only time can bestow. Really it is the result not of age, but of common-sense, which is nearly as valuable. However, the heresy, which only dates from some fifty years back, already shows signs of disappearing. And naturally there are special occasions, as in string courses or window surrounds, where, for the sake of emphasis of forcing the note, as it were, it may be not only legitimate but necessary to use a specially picked and uniform colour. Only not all over the wall. One does not make a dinner off mustard.

A further development and a characteristically brickish, and therefore satisfactory development, of this variety of colour on plain surfaces occurs in the use of diaper. In old-fashioned kilns the bricks that were nearest to the fire were semi-vitrified, with a bluish tinge and something of a glaze, and it was an easy and natural matter to arrange these so as to produce a pattern. It is a treatment that requires skilled use, but so used is capable of delightful effects. In my judgment it should be employed either very lightly or very boldly—either treated as something precious and reserved for a few points of the greatest importance, or laid on unsparingly and so evenly all over that it is at once recognised as the chief interest of the building. In that case the treatment of all other features should be quite unobtrusive or the total impression will be one of confusion and hustle. The shapes of patterns are conditioned by the oblong of the bricks, and the necessity of "breaking joint," as it is called—that is, not allowing vertical joints to occur immediately over or under each other in adjoining courses. It follows that a continuous line can only be formed in a horizontal direction. Vertical and diagonal lines are toothed or jagged, and curves are impossible. In fact, the system of drawing is almost precisely that of an Oriental carpet. Within these limits a large range of pattern is possible, but by far the commonest is the simple diamond pattern, covering the wall with crossing diagonal lines, and except for very large spaces this looks better the closer it is woven. In fact, after comparing a great many examples, I should say that the most satisfactory size is where each diamond or interstice of the mesh is five courses high, with an extreme width of a brick and a half, or fourteen inches.

Change of colour may be very logically used, as in Wren's part of Hampton Court, to mark off the different storeys of a building. The seventeenth and eighteenth centuries used it as a substitute for mouldings to enhance the dignity of door and window openings. Probably this, which I think is a purely English touch in design, arose from the use of "rubbers," or finely-grained, and therefore strongly coloured, bricks which could be easily cut or rubbed to the varying shapes required for the flat arches that spanned the new-fangled sash windows of the period. The arches telling out as bars of pure colour against the dull tones of the rougher general brickwork, dull because the surface, being rough, was everywhere pitted with minute specks of shadow, it was felt that they required the support of vertical piers of the same character, and the scheme was soon extended to include all the more definitely "architectural" features of the front, quoins, string courses, and cornices. How finely Wren handled it you need go no further afield than Chelsea or Kensington or the admirable little church of St. Benet in Thames Street to appreciate. We are fortunate in this country in the range of colour we have to draw upon in our bricks. And here I would put in a word for the common London stock, with which we are all familiar in the buildings of the early and middle nineteenth century. It has been too much neglected of late in favour of hotter colour, but actually, in its somewhat irregular shape, its roughish texture, and its variegated sober solour, including all tones of yellow and brown, with occasional splashes of purple, it is a facing

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brick of very high quality. In narrow streets and smoky quarters, it is true, it holds the soot too easily and goes black, but where the wind and rain can get at it to keep it clean there are few better kinds of wall to live with.

Moreover, it forms an excellent background for red roses which with red bricks, though most gardeners appear to be blind to the fact, are apt to produce an excruciating discord. For the warmer tones there is nothing better than the back of the old Admiralty in St. James's Park, and for a cooler harmony there is the Powder Magazine by the Serpentine Bridge, where it is beautifully combined with silver-white Portland stone and silver-grey slates. I wish I could show you this little appreciated building, so exquisite in form and mass and detail, as well as in colour, but I do not mind confessing that in present circumstances I was afraid to photograph it for to-night's paper. One cannot lecture from a military prison.

Glazed Bricks.

The colour scheme can, of course, be greatly extended and heightened by the use of glazed bricks, which will key the tone up to almost any degree of brilliancy. In these, however, the colour is an attribute entirely of the glaze and not at all of the brick, so that from that point of view they should be classed rather with tiles and can hardly come under our consideration to-night. But anyone who is interested should make a point of walking along Addison Road where the house which Mr. Ricardo's imagination conceived holds up a coloured flame to the smoky skies of London and dazzles our Cockney eyes with the romantic hues of Bagdad and Ispahan.

But the colour of the brick itself is only one element in the colour of the wall, for that colour can be varied infinitely, within certain limits, by the colour, the thickness, and the plane of the mortar joints. Even when you have picked your bricks for uniformity of colour, by the mere manipulation of the joints you can so vary the appearance of the wall in different parts that no casual observer would believe that the bricks were the same. Joints may be black, they may be white, or any shade of cold grey or warm brown between the two. They may be as narrow as one-sixteenth of an inch, or as wide as three-quarters. They may be flush with the brickwork, or bevelled in at the top, or bevelled both ways, or raked right back ¼ inch from the surface, or even projecting, though that is a fashion which we may hope will never be revived. If you take all the permutations of these possibilities you can see the range they give is pretty wide—indeed, when you have experimented with bricks and mortar you will realise that it is hardly an exaggeration to say that the bricks are only a secondary element in the appearance of a brick wall.

Hitherto we have considered bricks by themselves and brick buildings as consisting entirely of bricks, but from time immemorial brick has been used in conjunction with other materials of all kinds, stones, flint, timber, terra-cotta, stucco, and so forth. Most often the bulk of the wall is brick, and the other materials are reserved for the posts of honour. Thus examples will occur to everyone of brick buildings with wrought stone dressings. Hampton Court is familiar, New Scotland Yard—but the treatment is so common it is needless to quote. Or, again, the brick and stone may be regarded as equals and combined in various decorative ways on the plain surface of the wall, either chess-board fashion, in squares of about 9 inches, or in alternate horizontal bands, as shown forth uncompromisingly by the Butchers' Hall at Haarlem. But there are other cases where brick is either the harder or the locally rarer or the more tractable material in which it is called upon to do the more honourable duty. Take flint, for instance. It is next to impossible to build an angle with flint. I have never seen but one building where it has been done. The mediæval builders sometimes made their church towers circular to get over the difficulty, but you cannot provide every building with round angles. So in the flint districts the quoins and window jambs are usually formed in brick because it is tractable. On the other hand, in the South Downs chalk was the common building material, and that is too soft to stand wear and tear. So there, again, brick was used for similar positions because it is hard. In the district immediately north of the South Downs, between Petworth and Midhurst, where the staple material is a green sandstone, the same treatment is noticeable as a local peculiarity. Structurally it seems quite unnecessary, and I can only suppose that the builders adopted it in imitation of the chalk district a few miles away because they liked its looks—and why not? In timber-framed buildings the function of brickwork is quite subordinate, being merely to fill the spaces between the timbers and keep the weather out, and its non-structural character is often emphasised by the use of patterns obviously unsuited to carry weight, the bricks being laid diagonal, or herring-bone, or alternately upright and horizontal. With stucco there are two main lines of treatment, one where the brick is the general walling material, and the stucco is used exactly like stone, for which, indeed, it is simply a cheap substitute, in window dressing, strings, mouldings, &c. There is so much charming work of this kind by the Adams and their followers scattered all over London, work whose disappearance in every case makes us so much the poorer, that one cannot abuse it, but it is after all a makeshift. The other system, far better suited to the characteristics of the two materials, is, of course, the reverse, where the stucco is used for the plain surfaces and the brick for the dressings. One sees it so admirably handled all through North Italy, even at the present day, where it is the commonest scheme for unpretentious houses, wayside railway stations, factories even, and it so excellently combines breadth and piquancy that I wonder it has been so little used in England. Here it seems generally to be left to engineers, who are apt, with all respect be it spoken, to be a trifle heavy-handed and to confuse coarseness with simplicity.

Then about texture. It has dawned upon us of late that a machine-made brick, with a surface like plate-glass and edges like a razor, is a little lacking in human sympathy, and that a wall built of some thousands of such bricks is positively improved by "lappets of tangle." So that knobbly bricks embedded in mortar joints as nearly as possible equal to the height of the bricks themselves are now the only sure way of salvation. The Americans, with their boldness and love of cutting Gordian knots, have worked on the same lines, and I have received advertisements from the other side of "Tapestry" bricks—even of "Rug" bricks, which, to judge from the photographs enclosed, can be hardly distinguishable from lumps of wool. With all the will in the world one can scarcely accept this as the true outward expression of the power to carry weight. You will see from some of the photographs how lovely a thing a wall can be that is built of rough bricks with wide joints, but the truth is that beauty depends most of all on adaptation to functions and surroundings, and there is room in the house of art for every kind of technique, provided only that each kind be used in the right time and place.

So, too, with size. Here in the South of England we have a standard size, 9 inches by 4½ inches by 2⅝ inches. After a century or so of unquestioned supremacy this was found to be dull, and, indeed, it is as thickly proportioned as a brick can be to be endurable, and there is without doubt a charm about a longer and thinner brick. But that is not reason enough for building whole walls of roofing tiles as we do nowadays. And more, without unwarrantable expense you cannot change the thickness of the inner bricks of your wall. So that in order to face with thinner bricks you have in some way or other to spoil the bond, and there is a comfort in knowing that every brick from back to front is well and truly laid that I do not think any amount of external charm will finally counterbalance.

Lastly, mouldings. The natural shape of a brick being a parallelogram, it is surprising how a simple moulding tells, and with how few mouldings you can get an effect of richness out of all proportion to their complexity. With a few splays, hollows, ogee curves, and rounded bricks, and, above all, cunningly contrived recesses and projections, you can do all you want. Do you ask for broken shadow? By projecting and recessing alternate bricks in a single course you have a row of dentils. Can anything be richer than the chimney-caps on the great stacks of our old farms and manor houses? It is done with mere oversailing courses, often no mouldings at all. Sometimes the outline is diversified by square breaks, sometimes by octagon planning, but some of the finest are plain oblong masses. The art comes in in the boldness of the projections and the proportion of them to the plain mass they carry. Also this is one of the places where thin bricks are essential. There is nothing more painful than a modern copy of these caps with 3-inch bricks and timid oversailings. Mullions, again can be perfectly well constructed of moulded bricks, and, indeed, nothing gives such a sense of harmony and completeness as the feeling that the whole building is formed out of one material. But they are only for use on a small scale, 3, 4, or 5 feet is as much height as they will be. In some of the Dutch churches you may see them on a vast scale, thin mullions 20 or 30 feet high, breaking into the freest tracery at the top. I fancy the bricks are threaded

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on iron rods—in any case, the result is acrobatic rather than structural. For feats of that kind a sense of decency will drive you to stone. And, in general, there must be no attempt to rival stone mouldings. If hints are taken from stonework—and in all ages, from the Egyptians and Greeks downwards, men have taken hints from one material to use in another—they must be no more than hints. Your crowning cornice cannot sally forwards like a cornice of stone, the want of length in the individual bricks will not allow it. You must translate it into terms of brickwork, be content with a moderate projection, and make up for such moderation by excess in other qualities that suit the brick genius.

We have touched upon a great many points—too many, perhaps—in brick design, and now we will turn to the illustrations which show how they work out in actual practice. Before doing so, if one may venture on a brief summary, it would be to some such effect as this. Do not be misled into thinking that there is only one right way of using bricks. Good work can be done with any kind of technique—rough bricks, smooth bricks, red bricks, white bricks, wide joints, narrow joints, all are right in their due places and seasons. Fashions will come up, but be very sure they will also die down. We have seen that there is enough to learn and to do in brickwork to keep any man in *statu pupillari* for the term of his natural life. But his learning should be kept in reserve, his clever points of detail used as weapons for the defeat of difficulties, not displayed and crowded like medals across the chest of his unhappy buildings. And if at any time he gets discouraged with his task and tired of his material, let him take comfort in the thought that there is no warmer term of commendation in the language than "a perfect brick."

L.C.C. AND BUILDING CONTRACTS.

SHORTLY after the outbreak of war the London County Council, through an Emergency Committee appointed for the purpose, made arrangements by which the financial difficulties of contractors could be to some extent alleviated, and more frequent payments made on account than the standing orders of the Council ordinarily permitted in respect of building works. The Finance Committee were asked at the time to continue such arrangements only so long as the restricted circumstances for trading facilities made them desirable in the interests of the Council. It having since been represented to the Finance Committee that considerable difficulty is being experienced by contractors in obtaining accommodation from the banks, and in obtaining material from merchants except on a prompt cash basis, the Finance Committee have from time to time continued the arrangements made by the Emergency Committee, and they propose that they shall continue until further order. They have, however, recently given instructions that the number of accelerated payments is to be reduced to a minimum, and that proposals for making such payments are to be put forward only in those cases in which the certifying officer considers that it is in the interests of the Council that they should be made.

In connection with this matter, the question has been raised whether, in consideration of the fact that under the arrangements referred to above contractors are in some cases receiving more frequent payments than those to which they are entitled under their contracts, the Council should deduct a discount on special payments. After careful consideration the Finance Committee have decided not to adopt this course, having regard to the doubt whether it would not militate against securing the prompt delivery of goods or completion of work, and to the comparatively small amount which would be involved.

So far, however, as future contracts are concerned, the Finance Committee are of opinion that if it were made known before tenders were invited that, for the convenience of contractors, more frequent payments than those provided for by the standing orders would be made, the tenders would probably be lower than would otherwise be the case, and they accordingly recommended at the meeting on Tuesday last that so long as the present circumstances of financial stringency due to the war continue to exist all future contracts which, in the opinion of the heads of departments, should provide for more frequent payments than those contemplated under standing order No. 295, such contracts should provide for more frequent payments, corresponding to those approved by the Emergency Committee on August 14, 1914. The Finance Committee wish to make it clear that they do not suggest any general alteration of the arrangements for payments under contracts, but merely such temporary modification thereof as may be desirable, in the Council's interests, to meet the present emergency. The recommendations adopted were:—

(*a*) That the operation of standing order No. 295 be suspended in order that the following recommendation (*b*) may be considered.

(*b*) That, until the conclusion of the war or during such shorter period as may be determined by the Finance Committee, in all future contracts for the execution of works of construction or manufacture with regard to which the heads of the departments concerned consider it desirable that more frequent payments than those provided for by the standing orders of the Council should be made, a provision be inserted to the effect that heads of departments shall issue certificates for weekly advances on all such contracts of less than £2,000, and for fortnightly advances on all other works contracts.

TOWN PLANNING IN ANTWERP, PAST AND FUTURE.

AT London University on the 18th inst. an interesting lecture was delivered by M. Alfred Portielje (Hon. Secretary of the Royal Society of Architects, Antwerp) under the above title. In his preliminary remarks an account was given of the fabulous as well as the possible origin of the city.

But Antwerp is, relatively speaking, a modern city. Its harbour is one of the best equipped on the Continent. Its commercial supremacy dates from the sixteenth century, its artistic fame from the seventeenth. This is, generally speaking, all that the average tourist knows about our city.

The people in Belgium have a predilection for titles and formulæ. If Brussels is the capital of the kingdom, Liége boasts of being the capital of the French-speaking and Ghent the capital of the Flemish-speaking part of the country. Antwerp from an official point of view has taken the title of the commercial metropolis; in fact, the situation of Antwerp is really a privileged one. It is enough to glance at the map of Europe to see that all the natural roads of the Continent join at the Scheldt quays.

Great efforts have been made to divert the German trade to the harbours of Bremen and Hamburg. It was to Antwerp that it went naturally, and it is still to Antwerp that the great road of the Rhine leads. Antwerp is the natural harbour of industrious Alsace and of all Northern France.

Whatever may be the truth of the origin of the city, it is quite certain that for some time in the first centuries there must have been an island fortress. In 641 St. Armand built the first church dedicated to St. Peter and St. Paul. There is a record of a grant in 726 to a church built in the Castle of Antwerp—"Intra Castrum Antwerpis."

Practically the whole of the town has been constructed on ground won from the river. Very important researches made a few years ago permit us to say that the successive inundations have raised the level from 15 feet to 18 feet higher than it was.

The reconstruction of the Bourg dates from 949, and was made by order of the Emperor Othon I. or the Great. By degrees more and more houses grouped themselves round this first centre and formed what was called the "Kuipe." The administration of the town in every respect was centred in the Bourg, where existed the Castle of the Lord, the tribunal of "Vierschare," and the church dedicated to St. Walburge.

The remains discovered on several occasions show that this fortress had the form of a stretched bow, of which the Scheldt formed the string. The walls were embattled, and a considerable number of towers placed fairly near to one another gave an important air. At the Rue de la Prison was a double gate with a dungeon on each side; this was reproduced on the seals of the town, and became later the coat of arms of Antwerp.

All successive enlargements of the city have been subject to the removal of the fortifications. In early times rivers and other natural boundaries always influenced or limited engineers and military architects in the defence of the town. In the last enlargements, however, this was no longer the case. As the means of defence became more important, and the methods of warfare were changing, it was no longer possible to rest satisfied with a mere little river; and so the defence works were constructed on a more extensive scale.

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As the population of the city increased in a remarkable way, a first enlargement of the "Kuipe" was decided upon between the years 1201-1216, under the Government of Duke Henry I.

Some authors state that at this time the first town hall was built across the canal near the "Pont de fer." It is more probable that it was erected somewhat later. But the Eglise Notre-Dame, later the Cathedral, formed from henceforward an integral part of the city, and was in a few years to acquire such an importance as to rise to the level of one of the first temples of Christendom.

When the Bourg came to be reconstructed, Duke Henry I., who must be considered as one of the principal benefactors of Antwerp, gave his consent to the second enlargement of the city. This was done in the years 1249-1250.

The singular shape of this ring of fortifications, after the second enlargement of the town, has frequently been noticed, and is explained by the existing ditches and streams, which were made use of in the defensive works. For up till now the town was only protected by a belt of earthworks, all the available money being spent in improving the stone walls of the castle of the reigning lord.

The third enlargement of the town was made between the years 1291 and 1314.

About 1291, says General Wauwermans in one of his wonderful books, the town was again too small to give shelter to all its inhabitants, and as trade had considerably increased the idea of forming a belt round the city of stone walls was put forward. But this costly scheme could only be accomplished in the course of years. First of all the local authority started by building the part between the tower Croonenburg and the Blue Tower; for the remaining part, as in the past, the existing canals and rivers were used, forming thus a temporary enlargement. New towers and gates were built on this occasion.

By this enlargement Duke Jean I. seems to have had in view the suppression of the Bourg as a strategic position. His charter of 1292, by which he allowed some private individuals to build on the wall of the Bourg, cannot be explained otherwise, although his successor continued these licenses only on the condition that the security of the fortress would not be diminished.

Jean II. continued the work of his father. This necessitating the use of funds which the council of the city had not at its disposition, he allowed the magistrates by a charter of 1298 to impose a tax to enable them to fortify the town.

The fourth enlargement started at the porte St. George, or, to say better, at the Tour Bleue. The new gates belonged to a system of defence very much admired by strategists. The remains of the second St. Jean Gate, discovered in 1883, and the Red Gate, demolished in 1865, are a proof that art was not irrelevant in these buildings. The former was adorned with sculptured corbels now preserved in the Museum of Antiquities of Antwerp. The gates were connected by an embattled wall provided with towers, which soon numbered twenty-one, and of which the Tour Bleue and the Tour des Boulangers were the most prominent. In spite of the recommendations of the Duke and of the efforts of the council the town was left without defence on the side of the Scheldt, and it was only in 1324 that the walls along the river were built.

In 1507 the project was formed of a fifth enlargement having for its object to throw into a new enceinte the buildings interfering with the means of defence of a part of the fortifications. A new school of military architecture had been established in Italy, and when in 1540 Charles V. came to Antwerp he was accompanied by Donata Buono Pellizuoli, who was considered one of the principal engineers of his time. After an inspection of the town he was commissioned to make a plan for new fortifications. On May 10, 1540, the Emperor appointed a commission to arrange the details, and Signor Donato and Master Pierre Frans were appointed as joint architects. The work was soon interrupted by a war between the Emperor and the King of France and was not properly begun until three years later, when the area was enlarged by the inclusion of about 4,000 Poles. The new gates were erected almost in the same places as the old ones. Five gates gave access to the exterior. In the course of making these fortifications a good many houses had to be pulled down and the inhabitants found shelter in the city. In addition the immense traffic which at that time had made Antwerp the first commercial port of the North of Europe necessitated the erection of all sorts of residences and warehouses—not to mention the Hall, the Exchange, and the residences of the representatives of foreign countries. A new kind of business was set up, the pioneers of which quickly became very rich—namely, the buying and selling of plots of ground and the building of houses. Amongst these enterprising men Gilbert van Schoonbeke, father and son, deserve specially to be mentioned. Both were wonderful men for their time, particularly his son, who was also one of the greatest financiers of his century.

In 1565 the work of extending the town came to an end. It now formed more or less of a semi-circle and measured 1,600 paces in length and 844 in width. It was composed of 200 blocks of houses divided by streets, 62 bridges over the interior canals, which conducted the water from the Scheldt into the town. There were 20 market places; 36 churches, convents, chapels, or almshouses; 18 channels or docks by which boats entered the town. The enceinte walls were of white stone and contained ten bastions. Among the prominent buildings were the church of Notre-Dame, or Cathedral, with its tower, the new Hôtel de Ville, the Maison Hanseatique, both erected in the same period from drawings of the architect and sculptor Corneille de Vriendt called Floris.

Such was Antwerp at its most prosperous time. But the work of fortifying the town was scarcely finished when political elements forced the city into new expenses for fortifications. Italian engineers were brought in to give advice as to the best site and plan for a great citadel fortress. It was eventually laid out as a pentagon of 300 metres, of which the salients contained five little bastions. This outline was the full application of the Italian system used for the enceinte of 1542, consisting of long curtain walls and small bastions. The construction of this citadel and its depending works are considered as constituting the sixth enlargement of Antwerp. That enlargement, however, was exclusively military, and never procured anything else for the city than considerable expense, serious anxiety, and much pecuniary loss for the people.

By the end of the eighteenth century Antwerp had fallen from its high estate as a result of the closing of the Scheldt. In the revolution of 1798 it was decided that the gates, walls, and moats of the ramparts of military places and fortresses belonged to the national domain and not, as heretofore, to the citizens. The communes were thus dispossessed of their properties without any indemnity. Antwerp was on one day to suffer severely from the consequences of that decision.

In 1817-8 the docks and quays along the riverside were made over to the city, which had to finish and maintain them according to the plans of the French Government. During the sixties some twenty-two million francs were expended on improvements in the city under the superintendence of the recently-appointed engineer-in-chief, Theodore Van Bever. The ninth enlargement took place shortly after. In the course of the last few years a tenth enlargement has been carried out at the north side, which is preliminary to the enormous works necessary for making Antwerp perhaps the largest harbour of the world. This consists chiefly of the new docks finished just before the war.

On December 20, 1907, King Leopold II. nominated a commission to study the questions with regard to the planning of Greater Antwerp. This commission, having done the preliminary work so as to answer the requirements of the different communes and to make them come to an understanding, decided to organise a competition for making the new plans for Greater Antwerp. The projects were to include the appropriation of the old fortifications, the drilling plain, and the polygon of the engineers at Berchem, all land situated between the Scheldt at the south side of the city and the Porte du Schyn. The competitors were allowed to suppress or to preserve the military buildings or to appropriate them to civil purposes, like police stations, fire brigade stations, or to utilise them as a monumental feature in their scheme. Certain other buildings could also be left out or kept in. Some of the requirements of the competition were to provide a circular boulevard or avenue, a metropolitan railway, spaces for public buildings, churches, educational establishments, a Palais de l'Industrie, a railway station, a concert hall, a town hall for Berchem, two hospitals, a new prison, garden cities, and at the end of the boulevard at the south part of the town a promenade giving a panoramic view of the Scheldt and accessible to motors and cabs. The net area of the blocks to be built upon, including the areas reserved to garden cities and to workmen's cottages, for public buildings, military works, civil and ecclesiastical buildings, and the ground reserved to the railways, were not allowed to be

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more than 40 per cent. of the total area of the ground to be utilised.

The competition was announced on May 2, 1910, and the designs had to be submitted by October 1 of the same year. Three premiums were offered: the first of 25,000 francs (£1,000); the second of 10,000 francs (£400); and the third of 5,000 francs (£200). It was stated that all accepted designs would become the property of the State; that the scheme could be executed in whole or part without the co-operation of the author; and that the Government would be allowed to buy any other scheme by paying £40.

On October 17, 1910, the assessors met to examine the twenty-seven projects submitted. After several days of consideration the following result was declared:

First premium: M. Henri Prost, of Paris.

Second premium: M. Marcel Auburtin, of Paris.

Third premium: (*a*) M. Alexis van Mechelen, architect of the town of Antwerp; (*b*) Forbath-Lechner and Warga, of Buda-Pest.

A commission was appointed with M. Prost as consulting architect so as to unite the different ideas into a practical scheme. Of all the plans which were presented and which were of high quality very few were of possible execution. Nearly every one ignored the financial side.

M. Portielje concluded by hoping that the realisation of this new enlargement may not be postponed indefinitely in consequence of this awful war. In any case one must be thankful for one thing: the siege of Antwerp proved the old belt of fortifications to be quite useless in the defence of the city, and one may perhaps hope the military authorities will not persist in their obstinate idea and maintain that belt which was always a hindrance to the city's development.

AMENDMENTS TO THE LONDON BUILDING ACTS.

An ordinary general meeting of the Concrete Institute was held on Thursday, March 18, at Denison House, 296 Vauxhall Bridge Road, Westminster, S.W. Professor Henry Adams, President, was in the chair.

A paper entitled "The London Building Acts, with some Suggested Amendments" was read by Mr. Osborn C. Hills, F.R.I.B.A., District Surveyor for the Strand. It was submitted, he said, with the view and the hope that a new Act will shortly be prepared embodying the existing Acts, By-laws, and Regulations. In 1894 our present London Building Act was passed, and thereby cancelled some thirteen existing Acts which had to be read together. Twenty-one years have elapsed since then; many decisions have been given in the High Courts, some of which completely annul the intention of the Act; many amendments have been framed, some of which have become law; and it will soon be necessary to repeat the process of 1894 and pass a new Act embodying all the existing laws and regulations, with certain desired modifications and improvements. Such improvements should be the carefully considered results of the various authorities; the Royal Institute of British Architects, the London Society, the Town Planning Association, architects, surveyors, structural engineers, builders, and property-owners should now unite in preparing such improvements in the Acts as they consider essential in readiness for submission to the proper authority. The London County Council "fathered" the Act of 1894 through Parliament, and the lecturer believes they have already collected much material for a proposed new Act.

The present Act should be clearly understood by all who read with average intelligence. It has to be administered by the London County Council and district surveyors. There are two important ways in which the Act needs amendment: (1) by making clear certain ambiguous or faulty wording, or wording that has been the subject of ambiguous or unsatisfactory decisions, and (2) by adding to or deducting from the existing provisions and requirements.

Let us remember the chief objects of the Acts are fourfold:—

1. To secure a proper width and direction of streets.
2. The sound construction of buildings.
3. The diminution of danger arising from fire.
4. The securing of more light, air, and space round buildings.

Mr. Hills proceeded to give an epitome of the sixteen parts into which the Principal Act of 1894 is divided, and then of its amending Acts.

There are, he went on, a score or more of minor amendments, obviously to be desired in the Principal Act alone, and a few in the respective Amendment Acts, but this is not the time or place to deal with them in detail.

What we can do with greater utility is to consider a few amendments on broad lines without attempting to put the suggestions into the exact phraseology necessary for new legislation, and, after having discussed and decided what we want, to leave the whole matter until the proposed new Act is within the range of practical politics.

First, the definition of a new building should include any addition (or alteration) to an existing building when such addition equals in cubical extent the cubical contents of the existing building incorporated with the new. In one case a new church was built but the old vestry was left. The builder described the work as an addition to the vestry. Of course such an extreme case is merely ludicrous, but it is sometimes difficult to know where to draw the line.

The next is more important, and has often been discussed under Section 13 (5).

If a certified plan of an old building in a narrow street (*i.e.* under 40 feet in width) is first obtained, it is now permissible to rebuild (or raise) that building to a height of 80 feet plus two storeys in the roof.

This produces a most depressing and insanitary street, and should not be allowed. Mr. Hills suggested that the old building may be re-erected to the same height as before, but that any increase in height be prohibited except to such portions of the building as are at a greater distance than 20 feet from the centre of the road.

Section 59 wants amending to read: All party walls and all external walls within 5 feet of any other building to be carried up to form parapets at least 8½ inches in thickness and at least 15 inches in height in every part above the roof, flat, or gutter, and in the case of warehouse buildings exceeding 30 feet in height such thickness to be increased to 13 inches and such height to be increased to 3 feet.

Section 74 (2) requires the portion of a building used as a dwelling-house to be separated, *inter alia*, by walls from the part used for trade. But there may be necessary doorways in such walls, and there may be formed in all walls of such building openings fitted with fire-resisting doors. This is rather ambiguous, and is capable of being read in different ways. It might be altered to read: Provided that there may be formed in such walls any necessary doorways, and all such doorways shall be fitted with self-closing fire-resisting doors.

The Act requires that the principal staircases of buildings occupied by more than two families shall be ventilated upon every storey. In practice the windows are always shut tight to keep out the bad air in the so-called open space. The Act might be altered to require adequate ventilation to the satisfaction of the district surveyor, provided that nothing shall empower the latter to require more than is required by the Act for courts within a building lighting habitable rooms.

Section 64 (10) might well be extended to include the words, "No flue shall be within 2 inches of the centre line of a party wall."

Arising out of the fatal fire at Sidney Street, Mile End, Section 64 (16) might enact that the hearth or slab shall be supported upon iron or other fire-resisting materials, wholly independently of any wood-bearers or supports, to the satisfaction of the district surveyor.

Section 70 of the Principal Act requires that every habitable room shall have a window opening directly into the external air, or into a conservatory. But windows in flank, external walls often have the walls of adjoining properties within 3 feet, and much higher than the top of the window.

Every habitable room should therefore have one or more windows opening directly into the external air *with an unobstructed angle of light of* 63½° from the sill level, calculated as if the window were one-tenth of the floor area.

There is scarcely a more prolific source of the spread of fire from one building to another than the common lighting court.

Mr. Hills suggested that any windows or other openings opening into an internal court in common with one or more other buildings shall be constructed and glazed with fire-resisting materials and that not more than one-third of the area of any such window may be made to open.

The remainder of Mr. Hills' suggestions for possible amendments referred to improvements of the Steel Skeleton

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Amendment Act of 1909 and the Regulations on Ferro-Concrete.

Section 21 of the 1909 Act defines the expression "pillar" (unless otherwise stated) as "a metal pillar, and shall include all columns and stanchions or an assemblage of columns or stanchions properly riveted or bolted together."

In connection with pillars there are one or two very desirable amendments. For instance, in the case of a stanchion consisting of a rolled steel joist with plates there is no regulation as to what extent the plates may project beyond the flange of the joist. It would apparently be no contravention of the Act to use a 10-inch by 6-inch R.S.J., with one or more 15-inch plates riveted thereto. The breadth of the plates would increase the least radius of gyration of the pillar over the least radius of the R.S.J. alone, and consequently a greater stress per square inch could under the Act be placed on the pillar, though obviously if the plates project 5 inches beyond the flange they would (unless they were of great thickness) be incapable of carrying a heavy stress.

It is desirable to limit the projection of plates beyond the flange. It is desirable where there is any considerable overlap of plates to use "tack" rivets if there are two or more thin plates. But nothing in the Act requires these, unless, indeed, one could consider that the definition quoted could be applied, and one could insist that it was not a metal pillar because it was not properly riveted together.

Section 12 (*c*) is somewhat ambiguous, but it is generally understood to mean that there shall be sufficient rivets at the base to transmit the whole of the load from the stanchion to the base-plate.

This apparently disregards the bearing of the pillar directly on the plate, and Mr. Hills submitted that if a pillar is rivetted together and then the base is machine-planed before the base-plate is put on there is no necessit for such a number of rivets, and that if (say) sufficient rivets were put in to take 60 per cent. of the load ample security would be obtained.

In the case of a solid steel column no rivets at all are (or can be) used.

Another point worth consideration in connection with pillars is the jointing or splicing. The regulation as to this is contained in sub-section 12 (*b*). Here, again, we find the word "properly," which occurs no less than three times. No rule is given as to the total sectional area of rivets to be used; if the ends of the pillars are machine-planed at right angles to the axis, an excellent joint is obtained, but there is nothing in the Act to require machine-planing. Experience shows that in pillars with sawn ends it is seldom that a joint can be close-butted over its whole area, and it is therefore desirable that the cover-plates and rivets should be sufficient to carry a large proportion of the load from the upper length to the lower.

Very little discretion is given to the district surveyor under this Act, and no indication is given as to whose interpretation of "proper" or "properly" is to be the decisive one, notwithstanding that the words occur ten times within the first 14 sub-sections.

It is to be noted that under Section 34 power is given to the Council to modify or waive any of the requirements of this sub-section 12 (*b*) as to joints in pillars.

Sub-section 7 limits the span of a girder to twenty-four times its depth, unless the calculated deflection is less than $\frac{1}{360}$th of the span.

That some such regulation is necessary there can be no doubt. But it would have been better to make the maximum span in all cases dependent upon the calculated deflection. Under the present regulation one may use a 10 inch by 6 inch R.S.J. to carry a distributed load of 10½ tons over 20 feet span, when the deflection would be $\frac{1}{320}$th, whereas if one had to carry only 8½ tons over a span of 20 feet 6 inches it would be necessary to use a 12 feet by 6 inch R.S.J. in order to limit the deflection to $\frac{1}{360}$th.

Another point on which considerable difference of opinion has been expressed is Clause 10, which requires that rivets shall be used in all cases where reasonably practicable. This has been sometimes held to mean that rivets must be used wherever it is possible for the men to handle the tools; but surely the word "practicable" has a wider meaning than this. For instance, if a connection has to be made through a thickness of 4 or 5 inches hand-riveting would cease to be practicable, as the rivet would be considerably cooled by being put through the hole before it was possible to begin riveting and sufficient power could not be used in hand-riveting on the site to make the rivet fill the hole and to put a proper head on it. In such a case the lecturer thought bolting to be more "practicable."

Then there is a question which, like the poor, is always with us—viz., that of end-fixing of stanchions. When is an end fixed? It is very desirable that there should be uniformity of practice in this respect, so that the contractor in estimating can know what he must provide for.

Section (25) limits the pressure on concrete foundations to 12 tons per square foot. This is equivalent to about 186 lb. per square inch, which to reinforced concrete engineers will sound an extremely low figure. In the regulations for reinforced concrete a stress of 600 lb. per square inch is allowed, and it is not very apparent why such a low limit should be fixed in this Act. Some alteration in this figure is desirable, though, of course, it would be useless to increase it to the figure allowed for reinforced concrete. The stress allowable on the ground to some extent limits the stress on the concrete, because, unless the concrete was very thick, the load per square foot on the soil could not be reduced to the limit allowed by the Act if the stress on the concrete were greatly in excess of 12 tons per square foot. To put a great thickness of concrete is not economical, because it is merely adding further weight on the ground without any equivalent gain in strength.

The paper concluded with an account of the Regulations of the London County Council with regard to reinforced concrete.

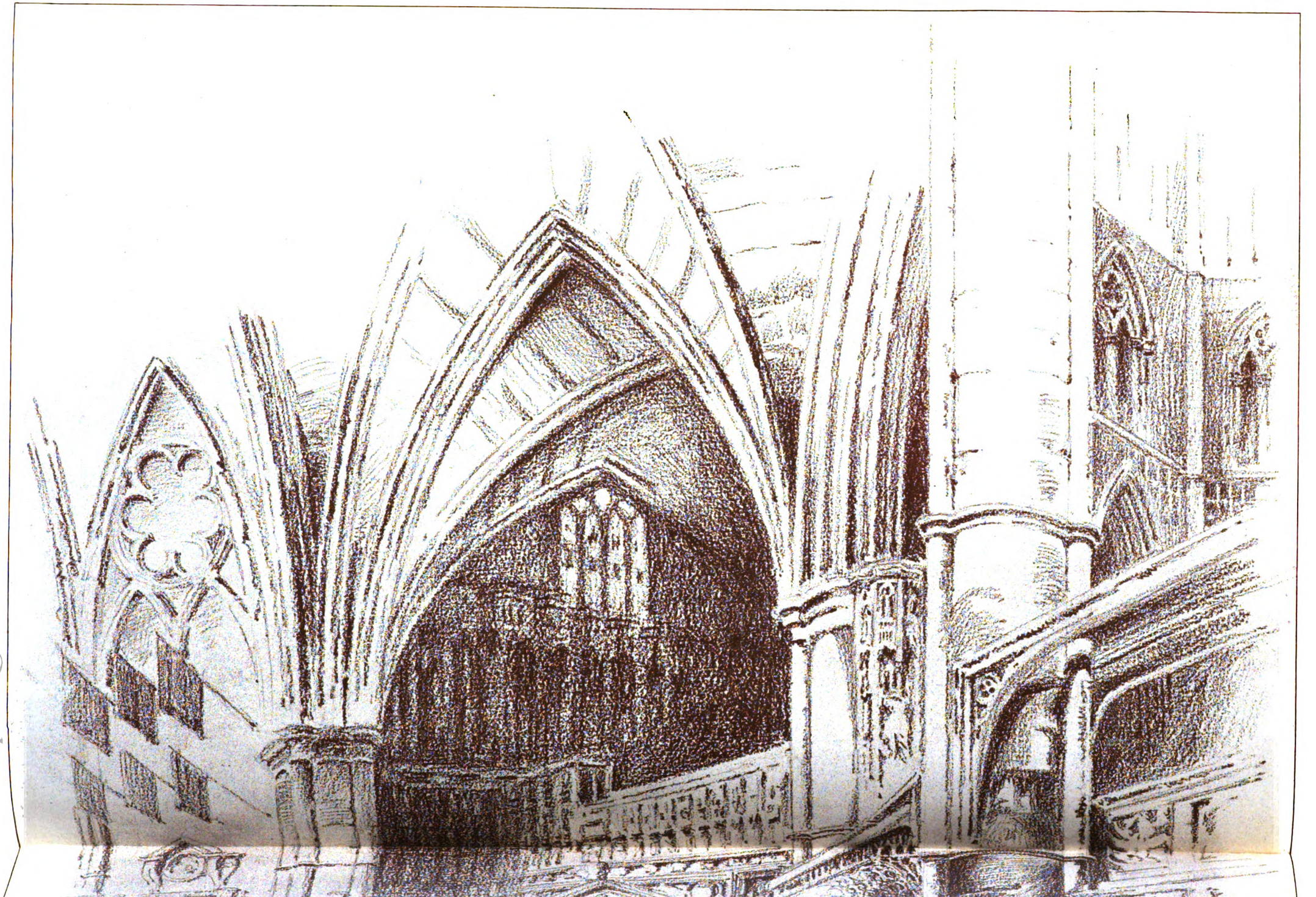
DISCUSSION.

Professor Henry Adams, M.Inst.C.E. (President), in opening the discussion, remarked that the author had dealt with a very dry subject in a very readable manner. The present time offered a very good opportunity to ventilate grievances as to the London Building Acts. With regard to the requirement that footings must be made to all walls, it was worthy of note that in the North of England it was customary to build without footings. Another point he might make was that the fees paid to the district surveyor sometimes exceeded the actual cost of the repairs.

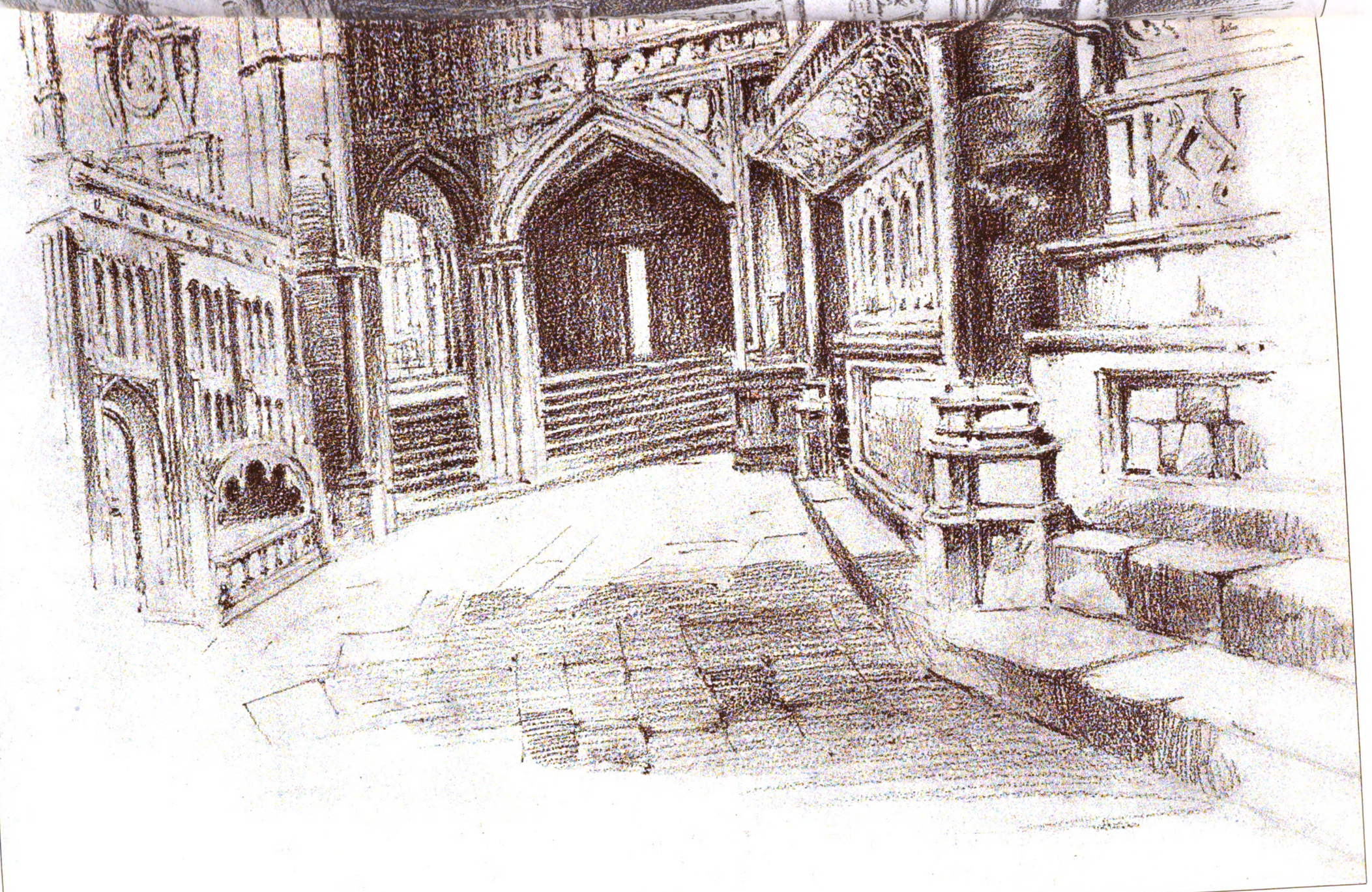
Mr. H. D. Searles-Wood, F.R.I.B.A., said there were one or two points in Mr. Osborn Hills's epitome which he did not quite agree with. For instance, in referring to Part VIII. of the Act, which deals with party structures and the rights of building and adjoining owners, Mr. Hills said in all cases of dispute the matters disputed shall be referred to a third surveyor, and if his award is not accepted . . . . But as a fact this third surveyor was not an arbitrator, for there were three equal surveyors, and any two of them could sign the award. In the list of various enactments regulating buildings in the County of London no mention had been made of the Chimney Sweepers' Act which was passed by the Good Lord Shaftesbury with a view to prevent boys being sent up the chimnies by limiting their breadth. Some years ago he (the speaker) wrote a paper on the influence of building by-laws on design, and in it reference was made to the old Babylonian code. This was formed on the "eye for an eye" principle: thus, if a building owner's mother-in-law was killed as a result of a collapse of the house, justice was obtained by killing the architect's mother-in-law. At the present moment the time seemed ripe for considering the subject on an absolutely new basis. Something ought to be done to prevent that terrible delay in getting the approval of the London County Council to plans. If reasonable regulations were laid down it ought to be enough for the district surveyors to see the work as it goes along, and thus the delay would be escaped. Any new legislation should avoid the present number of schedules, and the designer ought to be given a freer hand. The *Liber Albus* contains perhaps the very earliest schedule; therein it is laid down that every party wall shall be 3 feet thick, but that in the event of a man wanting to build a party wall and the adjoining owner not agreeing, if that adjoining owner gave 3 feet of ground the party wall could be built without entailing cost to himself.

Mr. Henry Lovegrove (District Surveyor for South Islington and Shoreditch) thought there ought to be a new London Building Act. Certain things in the present Act might be omitted, such as the long rigmarole about sky signs in Part XII. Certain clauses of the Act require to be absolutely amended because they are so badly worded. Never a week passed but someone came to him with the question, "When does a party wall cease to be a party wall?" When two water-closets are built a parapet has to be erected between them. Often the bricklayer puts a parapet on the front, too. Such papers as this by Mr. Hills

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AMBULATORY OF CHOIR, WESTMINSTER ABBEY.

From a drawing by Mr. CHAS. S. CARTER,

"The Architect" Travelling Student, 1914.

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"ASHLING," HAMPSTEAD GARDEN SUBURB
MR. E. GUY DAWBER, F.R.I.B.A., Architect

PHOTOGRAPH BY R. L. WARHAM, 90, SINCLAIR ROAD W.

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The Architect, May 28th 1915.

PHOTOGRAPH BY R. L. WARHAM, 90, SINCLAIR ROAD, W.

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HASCOMBE COURT, GODALMING.

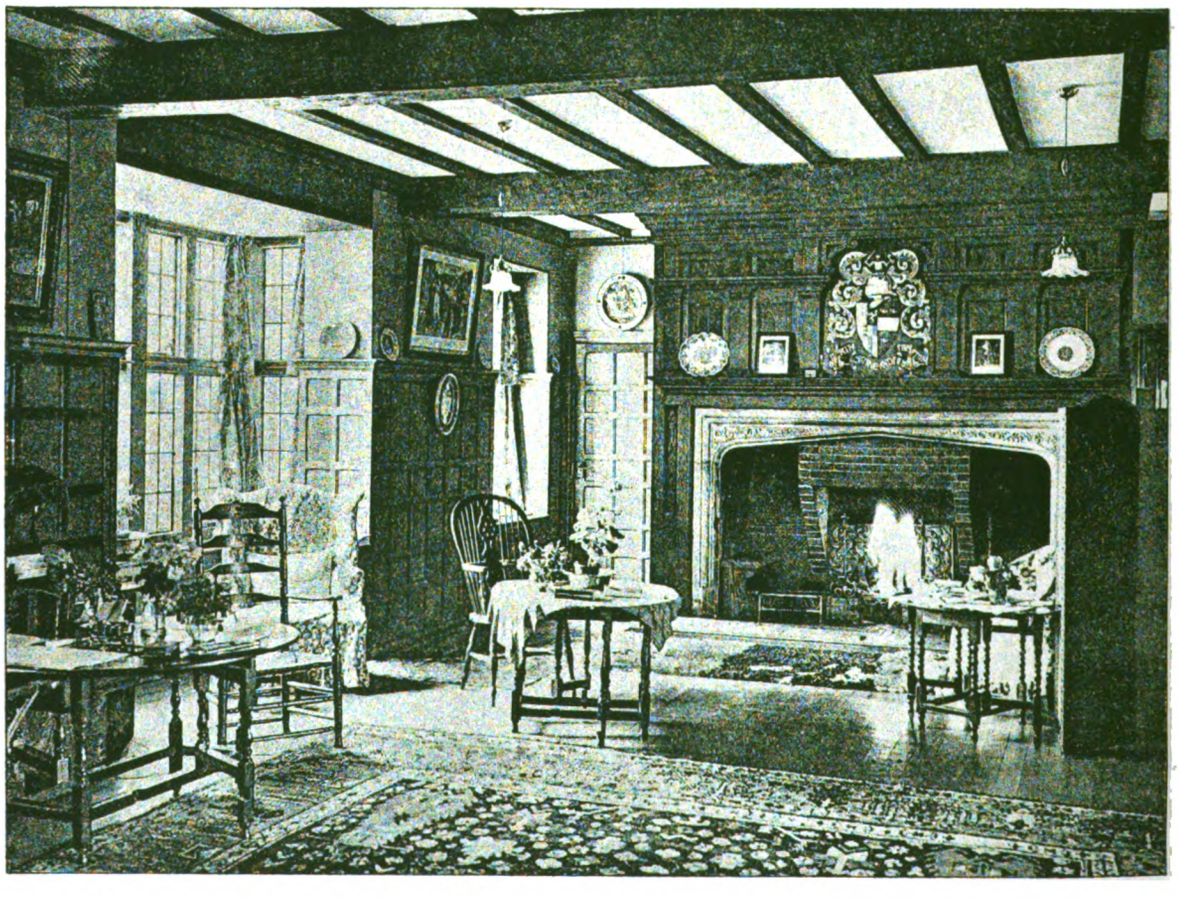
Mr. JOHN COLERIDGE, Licentiate, R.I.B.A. Architect.

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HASCOMBE COURT

Mr. JOHN COLERIDGE, Licen

Apr: 26th 1915.



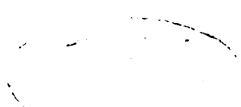




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GODALMING.



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do a good deal of good because they allow those who are not so well acquainted with the London Building Acts to have those measures clearly put before them. It was the desire of the architectural profession as well as of district surveyors to have the buildings of London well and truly laid.

Mr. W. G. Perkins (District Surveyor for Holborn) agreed that the present Acts undoubtedly required to be amended and codified in order that they should (*a*) be more easily understood by persons building in London, and (*b*) admit of more recent, improved, and scientific methods of building being adopted freely without the necessity of obtaining special sanction in individual cases as laid down under Section 82 of the Act of 1894. In almost every other line of the present Acts a double meaning may be found. Some of the members present might argue that the district surveyor should have greater discretion in these matters; but with this he could not agree. A. would want him to use his discretion in one way, and B. in another, and so on. Discretion was a two-edged weapon. It was better to have strict rules and insist upon them being observed. But those rules must be based upon common sense and make provision for exceptional cases. The definitions should in many cases be made more clear, as, for instance, the expressions "warehouse," "dwelling-house," "party structure," and "party wall." In referring to Part III. of the 1894 Act he would like to ask why should the City be exempt from the rule requiring observance of the general line of buildings? With regard to Part V., why should the huge modern office buildings erected to accommodate hundreds of clerks be allowed to do without proper open spaces about them in the manner required for small dwelling-houses occupied by only a few persons? The dark, badly-ventilated rooms that one meets with in these offices call for a most drastic alteration of the law, and they should be subject to the provision of Sections 41 and 45 (amended and simplified). With regard to the meaning of "wholly in one occupation," he must entirely disagree with Mr. Hills's contention that a block of offices let to different tenants could be deemed to be a building in one occupation. Rates and taxes in the case would have nothing to do with this point, for if the tenants of the offices are not lodgers they must be occupiers. As to the question of fees he heartily wished the existing method of remuneration could be abolished. On the other hand, a salaried official would not have the same freedom of action as the district surveyors now enjoy in exercising the powers given them by the Act as statutory officers. Again, in a street laid out before 1894, it is permissible to erect a dwelling-house so as to cover the entire site for a height of 16 feet and then provide the statutory open space above that height. This is an exceedingly bad state of affairs, as it can result in back-to-back houses. In Part VI. many alterations are required; a clause should be added requiring parapets to be provided to prevent slates and tiles blowing down on the roadway. It should be made unlawful to cut away brickwork without first obtaining a permit from the district surveyor, for footings and concrete are often cut away for the purpose of laying drains close alongside a wall, and piers are undermined so that a drain can be put beneath them. The increasing number of exempted buildings prompted the query why everyone should not be subject to the law.

Mr. E. Fiander Etchells, A.M.Inst.C.E., suggested that the clauses in any amending Act might be drafted by architects or engineers, and thus save them from the lawyer-drafted measures. He would like to ask for any and all suggestions with regard to possible amendments: it might take years before the amendments are made, but the earlier they are put forward the sooner it may come. The suggestion of Mr. Searles-Wood that there should be no schedules was too happy a dream. Year by year sees the increasing complexity of building construction, and legislation had to follow that complexity. In conclusion he would repeat his view that architects and engineers should take a far more active part in bringing about legislation and not leave it entirely to the legal fraternity.

The discussion was then adjourned until Thursday, April 8.

THE Royal Archæological Institute announce that "owing to the European War and the consequent difficulty of obtaining accommodation of every kind, the Council much regret that it is impossible this year to hold a summer meeting.

RESTORATION IN EAST PRUSSIA.

THE *Norddeutsche Allgemeine Zeitung* recently published a long article by Dr. Dethlefsen, a professor of architecture, on the subject of the proposed restoration of East Prussia.

According to the writer the work of rebuilding in the towns must be governed by the endeavour to achieve a beautiful and symmetrical whole. This would, however, be possible only to a limited extent, as many houses and buildings had been only partially destroyed, and could in many cases be restored merely by the addition of a roof, or the rebuilding of a wall.

Wherever such restoration work was possible it would have to be preferred to complete rebuilding, in order that the economic life of the province should be resumed as soon as possible, and also building material of all kinds would be scarce enough, so that not a single stone capable of being used should be rejected.

It must not, in short, be forgotten that the question with which they are faced was not a matter of newly founded and previously well-planned towns, such as those established throughout the province by the Teutonic Order in former days, but at the most of correcting the mistakes subsequently committed therein. They must wait for the renewed time of peace which was approaching in order to formulate and execute fresh plans.

This was applicable to municipal building as a whole and to the garden city movement in particular. Naturally, however, ample preparations might be made with these ends in view, and the general movement in their favour was in itself a very valuable and gratifying foundation.

Other sections of the community were engaged in determining the style in which the new buildings were to be constructed, and all were of the opinion that the original characteristic architecture of the province should be reproduced, with the modifications which had been made from time to time. It had, therefore, been recommended that in the erection of buildings in modern style, particularly that of 1800, the mediæval brickwork employed by the Order should be used, the chief object of this being to preserve the individuality of the province, which object would, of course, be pursued as far as possible.

The characteristic features of the architecture of a country were traceable not only to the imitation of old forms, but to the particular requirements of its inhabitants, to its topography and other conditions; these must be the foundations from which to-day, as had always been the case, the architectural style of each separate district must be allowed freely to develop. From this point of view the experience gained by their ancestors in these matters could not be too carefully studied, but at the same time all the good and modern improvements peculiar to the present day should be unhesitatingly introduced.

The task under consideration was so gigantic that no useful assistance offered could be too much. Official and non-official architects must once more unite in the endeavour to bring out, despite the unavoidable haste, a symmetric whole, so that the entire province of East Prussia might become a monument of architectural excellence such as it had never been before.

REORGANISATION OF THE BOARD OF TRADE AND BRITISH CONSULAR SERVICE.

AT a meeting of the circle of Scientific, Technical and Commercial Journalists of the Institute of Journalists, held this week in London, a discussion on the above subject took place. It was opened by Mr. Charles H. Luke, A.M.S.E., who took up the attitude that now is the time for laying plans and developing a national attack on markets which have been wrested from us by the well-organised efforts of German industrialism.

Another factor is, he said, the competition for German trade which naturally arises from our friendly rivals in the United States. This great country being neutral, American manufacturers are free to devote themselves to this work, and to quietly secure the full benefit of their enterprise in building the Panama Canal.

Further, we must not forget that, crush Germany as we may, we will have sooner or later to reckon with the genius of the nation in the competition for the world's trade, and bearing in mind the phenomenal rise of Teutonic

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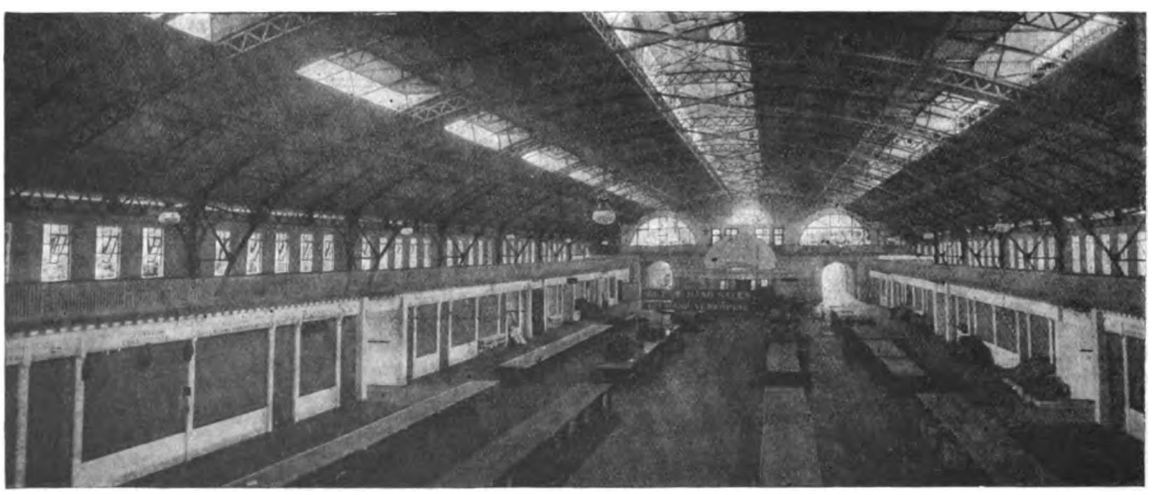
Aberystwith.—Queen's Hotel.
Birkenhead.—Masonic Buildings and Metropole Theatre.
Bolton.—Municipal Buildings; Brownlow Fold Council Schools.
Bristol.—General Hospital; Fine Arts Academy; Royal Hotel; Southmead Poor Law Infirmary; Summerhill and Eastville Council Schools.
Bath.—Pulteney Hotel; Empire Hotel.
Bury.—Brunswick Chapel, Nightingale Hospital.
Birmingham.—Halesowen Grammar School, Wolseley Motor Works, Barnsley Hall Asylum, Bromsgrove.
Broadmoor.—Criminal Lunatic Asylum.
Barnsley.—Workhouse; Infirmary; Baths and 8 Council Schools.
Brighouse.—Clifton Church.
Chester.—Town Hall.
Chadderton.—Town Hall.
Derbyshire.—Darley Dale, St. Elphin School.
Glasgow.—Blythwood Hotel; Masonic Halls, Rutland Crescent; City Bakeries, Ltd.; Salvation Army, Bath Street; Imperial Tobacco Co., Tobago Street; Port Dundas Distilleries; John Miller, Ltd., Printers, 322-334 St. George's Road; Kilmun Seaside Homes.
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Liverpool.—"Meccano" Works; Grove Hotel, Wallasey; Mariners' Home; Merchant Taylors' School; Majestic Picturedrome; Synagogue, Princess Road; Tivoli Theatre and Café; Penrhyn Street Council School; Rice Lane Model Council School, Hope Street Technical School, Clarence Street Secondary School.
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industry since 1870, this may well come sooner rather than later, though probably on healthier and less aggressive lines.

It is to the national or Government aspect of this question he to a great extent looked for the reason of our failure to fully benefit by our undoubted opportunities in the past. Mr. Luke then proceeded to develop this statement at some length. From his indictment we give extracts: —

The Government is represented by the Board of Trade at home, and by Commercial Attachés (whose work is seldom heard of) and Consuls abroad, all controlled by the Foreign Office.

The Board of Trade was originated by Cromwell and confirmed as a Board of Trade and Plantations by Charles II. in 1660. It had rather a chequered and spasmodic career until 1786, when by an Order in Council it was established very much in its present form. It is important to note that the value of the total imports and exports in 1800 was £68,620,000, or £1 2*s.* 6*d.* per head of population, while in 1911 it was £1,237,035,959, or £25 0*s.* 11*d.* per head of population.

The export trade of this country has steadily grown from a value of £244,080,577 in 1870 to £525,245,289 in 1913, but German export trade has grown from a value of £114,000,000 in 1872 to £496,482,000 in 1913, and would probably, had there been no war, have equalled or passed the British total by the end of 1914.

Is it reasonable to expect that the constitution of the Board of Trade originally intended to deal with a trade of £70,000,000 is calculated to deal satisfactorily with the present vast turnover? I submit that it is not, particularly when one bears in mind the other extremely important duties entrusted to the Board of Trade, many of which have grown from decade to decade, as a result of the march of science in relation to transport, lighting, &c., and the growth of the population, necessitating increased water supply, greater harbour facilities, &c.

Since 1864 the President of the Board of Trade has been a Cabinet Minister, a somewhat tardy recognition of the importance of trade to a "Nation of Shopkeepers." The principal officers are Secretaries, all taken from the ranks of the Civil Service, and all more or less tainted with that contempt of trade so characteristic of the Government official.

The concentration of so many functions under one official head has for a long time been considered by business men to be a basic mistake in our Government Trade Department.

It seems scarcely satisfactory that a Government Department should be responsible for the safety of the door handles of railway carriages and the fostering of £1,100,000,000 of import and export trade.

The magnitude of the interests involved would seem to point to a proper division of the duties of the Board of Trade into three Ministries—a Ministry of Commerce, a Ministry of Marine and Railways, and a Ministry of Labour. The Ministers selected should be selected by merit and not because of party allegiance.

There have been attempts in recent years to graft some more up-to-date methods on to the constitution of the Board of Trade, and two departments have been added, the Commercial Intelligence Department (which incorporates the old statistical department) and the Exhibition Branch. Both these departments can be made valuable, and there is no doubt that the commercial branch is doing good work.

It may be urged against the suggested reorganisation of the Board of Trade that the present is not an opportune time at which to undertake such work, owing to the serious difficulties which have to be faced from day to day.

But this question has been brought before successive Governments by business deputations and through the Press for many years, and nothing has been done, and now in trade, as in war, we are at the parting of the ways, and are as prepared for a trade campaign as we were for a world war on August 4, 1914.

What will happen after the war? Dumping of a character such as has never been experienced in the whole history of this country, for a considerable number of German manufacturers are making for stock, and they will require to convert the stock into money as quickly as possible, and will probably offer the goods at any price to the only country that is likely to have the necessary cash for same. This is a very serious question.

We have recently had two remarkable examples of the want of business instinct in Government circles.

A short time ago the Government decided, very wisely, to establish an Industrial Council, but much to the surprise of the ordinary man not a single labour leader was appointed as a member of this Council. One of the main reasons for the appointment of the Council was to deal with questions between employers and employee. It was only after an outcry from various directions that a labour representative was appointed.

The other glaring case is shown in the scheme for holding a London fair on the lines of the Leipzig Fair.

No one will dispute that it would be exceedingly important for British trade if such a fair were held in Great Britain every year, but, as far as we can learn, it is to be a very small one in the Agricultural Hall, whereas a proper fair on the lines of the Leipzig Fair would require about ten or twelve times the accommodation, and further it is well known that the Board of Trade have no exhibition experts on their staff. In a specialised business like exhibition work any Civil servant seems to be sufficient for the work.

It might be desirable to make some comparisons with the organisation in other leading countries which corresponds with our Board of Trade. It is hardly worth while taking Germany, for that country undoubtedly has had for many years a thoroughly organised department for fostering export trade and trade generally. The work which is done in this country by the Board of Trade is in Germany split up among various Ministries, and one understands that there is also a special Industrial Council which is formed of men of eminence in commerce and also Government officials, and that the German Government have in the past practically given autocratic power to this Council in the direction of fostering German trade.

Such a centralised policy is not possible in this democratic country, and what we have to do is to steer between the strongly bureaucratic system of Germany and the loose and unbusinesslike system in vogue in this country.

The work of the Foreign Office is extremely important to British commerce, for it is this office which has the appointment of Commercial Attachés and Consuls. There are no doubt quite a number of good business men among Attachés and the Consuls, but how few business men there are who, travelling abroad, get any good whatever from our Consuls. How different are the men we send out to those who represent Germany and the United States. Again, taking the actual Foreign Office list, out of about 1,200 Consul-Generals, Consuls, and Vice-Consuls, 25 per cent. or more are foreigners, among them some foreigners occupying the position of Consul-General.

Perhaps one of the most striking evidences of the inability of the Foreign Office to recognise what a commercial nation expects from its Consular representatives is the fact that up to about four years ago the British Consul-General for the German Empire was a German!

But what can we expect? The Foreign Office is of all the Government Departments the one most permeated with the spirit of red tape. British Consuls have been known to tell callers who wanted some business information that it was not their place to supply it!

The diplomatic service of this country costs about £300,000 per annum for 160 members, nearly £1,700 each per annum, the Consular Service with about 1,200 members costs about £100,000 per annum, and after deducting fees received by Consuls leaves a net cost of about £20 per Consul per annum to this great industrial nation! If it were not such a serious matter for the country that such a state of things exists it would be laughable. Would it be too much to ask that all British Consuls should be British subjects, appointed solely for their ability as business men and not through family interest?

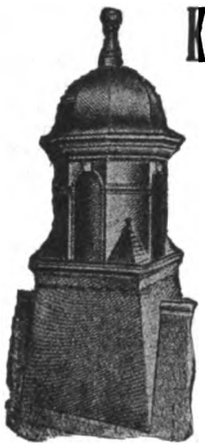
It would appear as if all Civil servants get inoculated with a virus which seems to take from them all ability to realise fully the fact that we are a commercial nation and that all our greatness in material things is derived from the successful pursuit of trade and commerce.

Every now and then we have a business man of genius at the head of a great department. What a difference it makes! Think of the late Joseph Chamberlain at the Colonial Office and his sound work. He was the embodiment of what is best in the middle-class business man, and in a lesser degree when Mr. Lloyd George was at the Board of Trade we saw practical reforms carried through in spite of the steady if unobtrusive opposition of the routine official.

Now is the time for the Government, as well as the banking interests and the people, to show where Britain also stands in trade and commerce.

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HEATING ENGINEER'S CLAIM AGAINST A COUNTY COUNCIL.

IN the Court of Appeal on Monday Lords Justices Buckley, Pickford, and Bankes delivered judgment in the appeal of the defendants in the action of Hampton *v.* the Glamorgan County Council from a judgment of Mr. Justice Horringe, sitting without a jury, who awarded the plaintiff £197 17*s.*, balance of an account for a heating apparatus he had supplied to a girls' school at Pontypridd.

The plaintiff, Mr. Reginald Moore Hampton (trading as Hampton & Co., Cardiff), brought his action in the Court below because the Council had repudiated liability. The Council had contracted with a building contractor named Shale, of Llandaff, for the erection of the schools at a cost of £13,600. Shale subsequently made a deed of arrangement with his creditors, and the Council said that, having paid Shale and his trustee under the arrangement the money due, they would be paying twice over if they paid the plaintiff. They had no contract, they said, with the plaintiff, who was a sub-contractor under Shale, and that the letters of Messrs. Evans, Williams & Evans, the architects, showed this.

Mr. A. Adair Roche, K.C., for the appellants, said the Council did not appeal because of the amount, but there was an important principle involved. The decisions on the point were puzzling. The contract with Shale provided for certain prime cost items, one of them being a heating apparatus. For this Shale contracted with the plaintiff, who was a hot-water heating engineer. Up to the time of Shale's deed of arrangement all payments on the architects' certificates were paid direct from the Council to Shale and from Shale to Hampton. When Shale made his deed of arrangement Hampton demanded the balance of his account from the Council on the ground that Shale was acting as the agent of the Council. Mr. Justice Horridge had decided that Shale was the agent and that the Council were responsible, but that was entirely wrong as the correspondence showed. If the judgment of the learned Judge were correct all building contracts would be liable to be upset. The architects certainly approved of Hampton as a sub-contractor and arranged with him in a preliminary way what would be required of him, but that did not make a contract between the Council and Hampton, because the heating apparatus was provided for in the chief contract. That was borne out by the fact that when the plaintiff applied to Messrs. Evans, Williams & Evans, the architects, for £200 on account they replied that they only issued certificates to the chief contractor. When a second application of a similar character was made he was referred to Shale. The architects directed Shale to enter into the sub-contract, and in consequence of that in the statement of claim it was alleged that the architects had pledged the credit of the Council, but that had been abandoned.

Mr. Fortune, for the respondent, contended that the learned Judge was correct in his finding. The architects had very wide powers, and it was clear, he thought, on the correspondence that they intended the Council to deal direct with Hampton, and that Shale was merely the agent or the conduit pipe. The architects and Hampton had been negotiating for two months before Shale had his contract with the Council.

Lord Justice Pickford pointed out that there had been no request by the Council for tenders for the heating apparatus, and no tenders had been sent to them. They were sent to the architects.

Mr. Fortune agreed, and said that showed that the contract was with the Council. The Council were to get the benefit of the contract with Hampton and not Shale. It was not to Shale's interest to make the contract with Hampton. Hampton was always under the impression he was dealing direct with the Council, and when the surety was appointed after Shale's arrangement Hampton refused to acknowledge him. Then his clients finished the work themselves.

The Court intimated that counsel had to show that Hampton had a contract with the County Council, either through the architects or the contractor.

Mr. Fortune said he could only rely upon the documents he had read.

The Lords Justices held that the contract was between Hampton and Shale and not Hampton and the County Council. The Court would allow the appeal and enter judgment for the defendants, with costs.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Recruiting for the Forces.

SIR,—I hope you will again allow me space in your columns to communicate with your readers on the subject of service in the Forces of the Crown.

Now that we are approaching the commencement of the great struggle in Europe it behoves every man, whatever his age, to seriously consider whether he himself is doing all in his power to support Lord Kitchener and the Government in their appeal to the country to organise resources. Every man who is able to join the Army should do so at once, and those really unable to enlist should prepare themselves for the future, when they may be free; or when the whole reserve of the nation may be called on for a great united effort.

The new Expeditionary Force and its reserve battalions are, of course, the first thought of the Government and the nation. But provided a man is keen and has grasped in true perspective the meaning of military training and service he can find a place in the present military organisation of the country, whatever his age and whatever his capacity.

The Volunteers are being organised for those who cannot join the Regulars and Territorials, and although they occupy the last place in the military scheme, they can give real support to the Government. Every man who accepts the War Office conditions with regard to these Corps thereby expresses his entire trust in Lord Kitchener and shows that he appreciates the relative value of part time training and full time service.

The headquarters of Architects' Volunteer Training Corps has now been made the official enrolment office for the Army, and is continuing its work of recruiting for the Royal Engineers and Sanitary Companies, both of which services are still in need of recruits. In addition to all kinds of skilled workmen, draughtsmen and surveyors can be accepted for the former, and men of sanitary experience are in demand for the latter.

The Corps which has now become the 4th Battalion (Architects) Central London Regiment of Volunteers, can offer excellent facilities for the men who are above military age or who cannot at present join the Army.

The training centres are at St. John's Wood, Westminster, and Holborn, in addition the Dulwich College, Loughton, and Boreham Wood, where there are splendid areas for field exercises and manœuvring.

A school of arms has been started at Erasmus Street, Millbank, and this is open to all members who have become efficient in drill and musketry.

As a result of the War Office Regulations and some months of uncertainty the Corps is now composed of really keen men, difficulties are being met in the right spirit, and the prospects of service are most encouraging, but it is essential that the Battalion to be of use should be recruited to full strength as soon as possible.

All keen recruits will be most welcome whether they come singly or as an organised body. Any corps wishing to amalgamate with and come into the 4th Battalion C.L.R. Volunteers will obtain every facility attached to the Regiment, and will be able to retain its identity as far as is compatible with efficient organisation and discipline.

Join the Army at once if you can; if not, join the Volunteers.—Yours faithfully,

ALAN POTTER,
Chief Recruiter 4th Battalion C.L.R.V.
18 Tufton Street, S.W.

THE London County Council announce that they are prepared to award in 1915 sixty Art Scholarships for full-time day instruction and a number of Exhibitions for evening instruction. A number of the Scholarships will be reserved for those engaged in artistic crafts in order that young artisans who are anxious to widen their knowledge of their craft may be given facilities for relinquishing their occupation for a year or more in order to follow a course of advanced instruction. The last day for receipt of application forms, which may be obtained from the Education Officer, is April 24.

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A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Dunstable.—Chow's School: cookery and joinery Centre.

BUCKINGHAMSHIRE.

Aylesbury.—"Bull's Head" Hotel: additions and alterations.

"Heydon Hill House": additions and alterations for Mr. J. Putman.

House, Highbridge Walk: stables and coachhouse for Mr. Simmonds.

CHESHIRE.

Congleton.—Proposed municipal dwellings.

Frodsham (near).—Proposed school for the National Children's Home and Orphanage.

CORNWALL.

Newlyn.—Proposed Council School, Carne Road, Tolcarne.

Penzance.—Workmen's dwellings. Messrs. H. Thomas & Sons, contractors, Crowan, Camborne.

DERBYSHIRE.

Bolsover.—Fire Brigade house.

Long Eaton.—Open-air Swimming-bath, West Park (£1,750).

DURHAM.

Eastington.—Children's Receiving homes.

Jarrow.—Goods yard: stables, &c., for N.E.R. Company. Messrs. S. Fenwick & Co., contractors, Northumberland Road, Newcastle-on-Tyne.

Silksworth.—Two houses, Margate Street, for Messrs. J. & W. Hodgson.

HERTFORDSHIRE.

Hemel Hempstead.—Seven cottages, Ebberns Road, for Mr. T. C. Gold.

ISLE OF WIGHT.

Fairlee.—Hospital: additions for the Joint Hospital Board. Mr. S. R. Cocks, architect, 5 St. Thomas Street, Ryde.

KENT.

Chatham.—Two houses, Kingswood Avenue, for Mr. H. P. Hughes.

House, Holcombe Road, for Mr. Baker.

Dover.—"Metropole" Hotel: alterations. Messrs. Beeston & Dixon, architects, 10 Eastbrook Place.

LANCASHIRE.

Accrington.—Picture Theatre, Abbey and Peel Streets, for Mr. R. Stewart.

Manchester.—Industrial School, Cheadle Hulme (£38,000).

St. Helens.—Two houses, Alfred Street, for Mr. W. Robson.

Six houses, Charnwood Street, for Mr. J. Gleave.

LINCOLNSHIRE.

Claypole.—Proposed hospital for ten beds.

MONMOUTHSHIRE.

Rhymney.—Proposed Elementary School. Mr. J. Bain, architect, County Education Committee's Offices, Newport.

NORTHAMPTONSHIRE.

Peterborough.—Classrooms: alterations for the United Charities. Messrs. J. G. Stallebrass & Sons, architects, 26 North Street.

NORTHUMBERLAND.

Newcastle-upon-Tyne.—Public Elementary School (for about 800 places), Walker Road.

SOMERSET.

Banwell.—Pumping Station, &c., near Eversleigh, for Axbridge Union R.D.C. Mr. A. Powell, M.I.C.E., engineer, 10 Orchard Street, Bristol.

STAFFORDSHIRE.

Newcastle-under-Lyme.—Working-class dwellings, the Lower Green (£5,340).

SURREY.

Epsom.—Proposed Council Schools, near Dorking Road.

Kenley.—St. James's Church, Godstone Road.

SUSSEX.

Bexhill.—Isolation Hospital: new buildings (£6,500).

WARWICKSHIRE.

Birmingham.—St. Germain's Church, City and Portland Roads, Edgbaston (£8,400). Mr. E. F. Reynolds, architect, 25A Paradise Street. Messrs. Collins & Godfrey, contractors, The Cross, Tewkesbury.

Foleshill.—"Stag and Pheasant" Inn: rebuilding for Mr. F. Stringer.

St. Paul's Sunday School (£980). Mr. T. F. Tickner, F.R.I.B.A., architect, High Street Chambers, Coventry. Mr. H. Goode, contractor, Holmsdale Road, Coventry.

Warwick.—King Edward VII. Memorial Sanatorium, Hertford Hill. Mr. West (of London), architect.

YORKSHIRE.

Barnsley.—Business premises, Pall Mall: addition for the B.B. Co-operative Society.

Harbro' Hills Working-men's Club, Denton Street: extension.

Two houses, Locke Avenue, for Mr. C. W. Plastow.

Beverley.—Cinema, Butcher's Row. Messrs. Freeman, Son & Gaskell, architects, 11 Carr Lane, Hull.

Bradford.—Inn, corner of Great Horton Road and Paternoster Lane, for Messrs. J. Stocks & Co., Ltd.

Brierley.—Proposed public elementary school for about 200 places.

Halifax.—Y.M.C.A. Military Institute, Ward's End. Mr. C. H. Petty, architect, 12 Waterhouse Street.

Leeds.—University Hall for Women: extension.

Leyburn.—Proposed isolation hospital.

Middlesbrough.—Dairy, Clifton Street, for the Co-operative Society. Mr. R. J. Archibald, architect, 29 and 31 Albert Road.

Ossett.—Council school, Gawthorpe (£10,000).

Worsborough.—The Kendray Hospital: proposed extension.

WALES.

Mostyn.—Workmen's houses (£5,200), for Holywell R.D.C.

Porthcawl.—School and domestic science Centre. Mr. D. Pugh-Jones, County architect, County Hall, Cardiff. Mr. R. Jones, contractor, Inglewood, Caerphilly (£2,974).

Whitchurch.—Council school. Architect (as last). Messrs. Watts & Gale (of Cardiff), contractors (£2,890).

SCOTLAND.

Aberdeen.—Factory, South Esplanade East, for the Albumenoid Products Co., Ltd. Messrs. Jenkins & Marr, architects, 16 Bridge Street.

Cults.—Parish church. Messrs. A. Marshall Mackenzie & Son, FF.R.I.B.A., architects, 343 Union Street.

Edinburgh.—Sorting Office, West Park Place.

Glasgow.—The Adelphi Distillery, Muirhead Street: alterations for the Distillery Co.

The Royal Samaritan Hospital for Women, Coplaw Street: mortuary and chapel.

Fourteen terrace-houses, Borden Road, Jordanhill. Mr. J. Downe, builder, 620 Crow Road, Jordanhill.

The Coupar Institute, Clarkston Road, Cathcart: hall and library, for the Corporation.

Pneumatic and hydraulic power Station, Main Street, Govan, for Messrs. Harland & Wolff, Ltd.

Power Station, Hart Street; and alterations, East Hope Street, for Messrs. W. Beardmore & Co., Ltd.

School buildings, North Avenue Road, for the School Board.

Machine Shop and Office, corner of Three Ell Road and Ballochmorrie Drive, Craigton, for Messrs. Arrol & MacGillvray.

Villa, 17 Montgomery Road, Newlands, for Mrs. G. H. R. Garrow.

Lochgelly.—Church (£3,000 to £4,000).

Paisley.—No. 2 George Street; extensions, for the Trustees of the late Mrs. Fulton (or Walker).

Factory, Greenhill Road, for Mr. A. Mather.

Catholic School, Carlile Place: additions and alterations, for the Most Rev. Archbishop Macguire.

IRELAND.

Cloughwater.—Church. Mr. S. J. McFadden, architect, 61 Church Street, Ballymena (also at Coleraine).

Newry.—Twenty-nine labourers' cottages.

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No. 273 REGISTER.

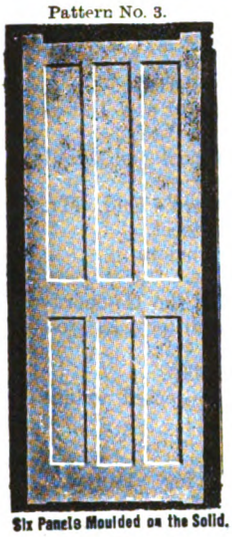
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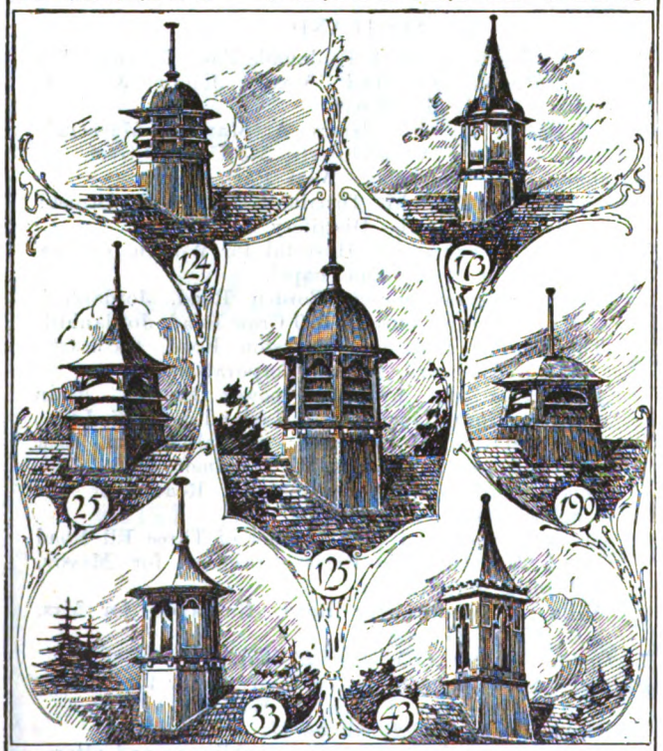
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THE
Architect and Contract Reporter.
FRIDAY, MARCH 26, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

NOTICE.

Next Friday being Good Friday, THE ARCHITECT *will be published on Thursday. All advertisements intended for this Number must reach the Office not later than* 4 P.M. *on Wednesday, March* 31.

No alteration of advertisement copy can be allowed after Saturday morning, March 27.

COMPETITIONS OPEN.

BRADFORD.—March 31.—The Corporation invite competitive designs for the re-planning of streets in the central area of the City of Bradford. Mr. Reginald Blomfield, R.A., will act as assessor. Particulars may be obtained on application to the undersigned, accompanied by a deposit of £1 1*s.*, which will be returned on receipt of a *bonâ-fide* design. Mr. Frederick Stevens, Town Clerk, Town Hall, Bradford.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

WHITEHAVEN.—April 21.—The Town Council invite competitive designs for the laying out of the Coach Road site (6a. 1r. 25p.) within the borough and erection of houses thereon. The author of the design placed first in order of merit may be employed as architect on terms to be arranged, and if not so employed will receive a premium of thirty guineas. The author of the design placed second will receive twenty guineas, and the third ten guineas. Copies of conditions of competition and plan of site and other particulars can be obtained on application, upon depositing £2 2*s.* The Borough Surveyor, Town Hall, Whitehaven.

CONTRACTS OPEN.

ALDERSHOT.—April 7.—The War Department invite tenders for artificers' works contracts for a period of two years from April 1915 in the following Engineer Districts in the Aldershot Command: (1) Blackdown and Deepcut; (2) Bordon; (3) Woking, including Pirbright and Cobham. Forms of tender, conditions of contract, and all information may be obtained upon application at the Headquarter Office, Aldershot, by letter, addressed to the Superintending Inspector of Works, or in person, up to April 1. Tenders to be forwarded by April 7 to the Director of Army Contracts, Imperial House, Tothill Street, S.W. (See advertisement.)

ANGARRACK.—April 9.—For alterations of two houses and shop front, for Mr. Harris. Mr. Harris, Angarrack, Cornwall.

ASHINGTON (NORTHUMBERLAND).—April 17.—For the supply and erection of the following, for the Ashington Urban District Council: (1) steel-framed retort house, coal store, purifier house and steel chimney; (1A) continuous vertical retort house, retort bench and coal store complete; (2) retort bench, regenerator settings and retort ironwork; (3) boiler house, stores, offices and concrete foundations; (4) concrete gasholder tank and tar and liquor tanks; (5) gasholder. Deposit £5 5*s.* Mr. C. Alderson, clerk, Bridge Street, Morpeth, or Messrs. W. A. Valon & Son, Caxton House, Westminster, S.W.

BARGOED.—March 31.—For the following work at the isolation hospital, for the Bedwellty Urban District Council: (1) Reinforced-concrete boiler-house; (2) laundry, coal, w.c. and steps, and draining the two new blocks. Deposit £1 1*s.* Mr. D. H. Price, surveyor to the Council, Abergargoed.

BARROW-IN-FURNESS.—March 31.—For provision of bathroom accommodation at the registrar's house, borough cemetery, for the Corporation. The Borough Engineer's Office, Town Hall, Barrow-in-Furness.

BLISLAND.—April 10.—For erection of a screen at the Blisland Council school, for the Cornwall Education Committee. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

BYFLEET.—April 26.—For the erection of an additional engine-house, gas-generating house, new workshop, and coal store adjoining the present pumping station, Byfleet village, together with engine beds and other building works, for the Chertsey Rural District Council. Mr. Charles Muggleton, Byfleet Corner, West Byfleet.

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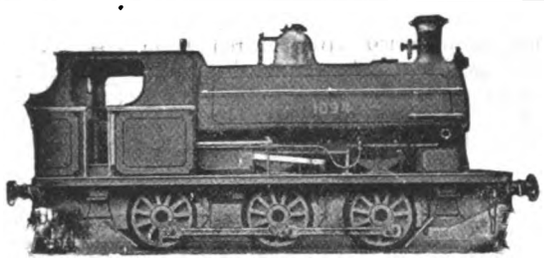
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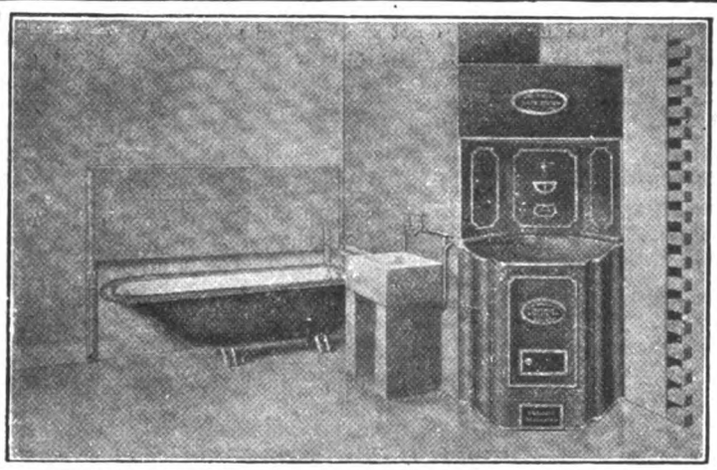


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EGLOSKERRY.—April 10.—For erection of a Council school at Egloskerry, for the Cornwall Education Committee. Deposit £1 1*s*. Mr. B. C. Andrew, architect to the committee, Biddicks Court, St. Austell.

ERITH.—April 3.—For erection of a new ward and extensions to the administration block at the Erith Sanatorium, Little Heath, Belvedere, for the Erith Urban District Council. Deposit £2 2*s*. Mr. H. Hind, surveyor, Council Offices, Erith, Kent.

FALMOUTH.—March 31.—For erection of steam laundry at Greenbank, for Mr. R. W. Langman. Mr. C. W. Parkes Lees, architect and surveyor, Porthpæan House, Lanteglos-by-Fowey.

FENWICK.—April 22.—For erecting a teacher's dwelling house at Kyloe, Fenwick, for the Northumberland Education Committee. Send applications and £1 1*s*. deposit by April 7 to Mr. C. Williams, secretary, The Moothall, Newcastle-on-Tyne.

GOLCAR.—March 31.—For the various trades (except mason's) required in erection of four dwelling houses in Swallow Lane. Mr. A. Shaw, architect, Golcar.

GRASSINGTON.—March 30.—For all trades required in erection of sanatorium buildings at Grassington, Yorks, for the Bradford Corporation. The City Architect, Town Hall, Bradford.

HIGH WYCH.—April 3.—For the erection of a police cottage at High Wych, Sawbridgeworth, for the Hertfordshire County Council. Mr. J. S. Killick, county surveyor, Hatfield.

HOLBEACH.—April 1.—For erection of a pair of cottages on Greenfield Farm, near Saracen's Head, Boston Road, for Mr. W. Waite. Mr. F. Burdett Ward, M.S.A., architect, 8 South Brink, Wisbech.

HUDDERSFIELD.—March 30.—For all trades for work in erection of garage and new bay window at house, Barton Road, Crosland Moor. Mr. P. A. Hinchliffe, A.R.I.B.A., architect, surveyor, and valuer, 14 Regent Street, Barnsley.

HUDDERSFIELD.—April 1.—For erection of a shed for sand-drying plant and store shed at Bridgefield Depôt, off Leeds Road, for the Corporation. The work will be let in two contracts as follows—viz.: (Contract No. 1) builders' work (all trades); (2) steelwork. Mr. K. F. Campbell, M.I.C.E., borough engineer and surveyor, 1 Peel Street, Huddersfield.

IRELAND.—March 31.—For building four labourers' single cottages and nine labourers' double cottages and fencing plots, for the Claremorris Rural District Council. Charge 5*s*. Mr. J. W. Judge, clerk of the Rural District Council, Claremorris.

IRELAND.—April 10.—For erection of two temporary blocks for male and female patients at the District Asylum, Ballinasloe, each block to accommodate fifty patients. Buildings to be erected in Hy-Rib system of reinforced concrete. Deposit £2 2*s*. Mr. G. B. Meenan, engineer, 83 Botanic Road, Dublin.

IRELAND.—April 12.—For alterations and additions to Dungannon House, and for the erection of a pavilion and medical officer's residence at Dungannon House, Dungannon, County Tyrone, for the County Council. Mr. James Hunter, B.A., architect, Lisburn, and Mr. C. S. Hunter, quantity surveyor, Scottish Provident Buildings, Belfast.

IRELAND.—April 22.—For alterations and additions to the boiler shop, Broadstone Station, Dublin, for the Midland Great Western Railway of Ireland Company. Deposit £1 1*s*. Mr. W. Purcell O'Neill, chief engineer to the company, Broadstone Terminus, Dublin.

IVYBRIDGE.—March 29.—For erection of banking premises at Ivybridge, Devon. Send names and £1 1*s*. deposit by March 29 to Mr. W. F. Tollit, architect, Totnes.

KENDAL.—For erection and completion of a three-storeyed building, about 80 feet by 40 feet, at the works of Messrs. William Shepherd & Sons, shaft manufacturers, Beezon Road. Mr. M. G. Shaw, Licentiate R.I.B.A., architect, 45 Highgate, Kendal.

LANCHESTER.—March 31.—For erection and completion of additions to administrative block, sanatorium, Maiden Law, near Lanchester, for the Lanchester Joint Hospital Board. Mr. G. T. Wilson, architect, 22 Durham Road, Blackhill.

LEYTON.—March 30.—For the construction of underground conveniences at the junction of Church Road and Lea Bridge Road, for the Leyton Urban District Council. Deposit £10. Mr. E. H. Essex, A.M.I.C.E., Town Hall, Leyton.

LONDON.—May 11.—For steel constructional work in the extension of power house, for the St. Pancras Borough Council. Deposit £2 2*s*. Drawings may be inspected at 57 Pratt Street, Camden Town, N.W.

REEDHAM (NORFOLK).—April 3.—For erection of six or ten working-class dwellings in the parish of Reedham, for the Blofield Rural District Council. Deposit 10*s*. Mr. H. H. Cole, clerk, 12 Bank Street, Norwich.

RISHWORTH.—March 29.—For erection of eight artisan dwellings at Rishworth, Yorks. Messrs. R. Horsfall & Son, architects, 22A Commercial Street, Halifax.

SCOTLAND.—March 31.—For constructing new concrete toe, &c., at sloping wall in tidal basin of their harbour, for the Town Council. (Mr. R. Henderson, harbour engineer, 2 Saint Andrew Square, Edinburgh.) Mr. W. L. Macindoe, town clerk, Council Chambers, Kirkcaldy.

SCOTLAND.—April 29.—For the wright and joiner works required in connection with the proposed erection of sanatorium and children's home at Southfield, near Mearns, for the Glasgow Corporation. Deposit £1 1*s*. The Office of Public Works, 64 Cochrane Street, Glasgow.

SELSEY.—March 30.—For the construction of a water tower or reservoir of 50,000 gallons capacity upon piers 40 feet above the ground level, to be constructed on the "Kahn" system of ferro-concrete, for the Selsey Water Co. Tenders based upon other systems of ferro-concrete would be considered if accompanied with plans, specifications, &c. Messrs. J. O. Holt & Sons, 4 West Gate, Chichester.

SHOTTON.—April 13.—For erection of fifty workmen's dwellings, the construction of streets and sewers, and all other works connected therewith, for the Easington Rural District Council. Deposit £2. Mr. G. Waterhouse, architect, Council Offices, Easington, Easington Colliery, Co. Durham.

SHREWSBURY.—March 29.—For the following works, for the Corporation—viz.: (1) Brick urinal, Castle Fields; (2) bath, lavatory fittings, and sundry repairs at 3 Claremont Buildings; and (3) painting and decorating the interior of 3 and 4 Claremont Buildings. Mr. A. W. Ward, A.M.I.C.E., borough surveyor, The Square, Shrewsbury.

SUNDERLAND.—April 10.—For the construction of a timber-framed lifeboat house, covered with corrugated-steel sheeting and erected on a braced timber sub-structure, together with a timber approach thereto, near the Ferry landing stage on the south side of the River Weir, Sunderland, in the County of Durham, upon the foreshore and river bed thereat. Deposit £1. Messrs. Douglass, Lewis & Douglass, engineers and architects, 15 Victoria Street, Westminster, S.W.

TRURO.—April 8.—For the construction of new clock turret in steel and concrete, new ceilings in Council chamber and adjoining rooms, new mayor's parlour, muniment room, and store room, at the municipal buildings, for the Town Council. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

WAKEFIELD.—April 6.—For the remodelling of sanitary arrangements in the old infirm wards, for the Guardians. Messrs. Simpson & Firth, architects, Southgate Chambers, Wakefield.

WALES.—For erection of a house and boundaries at Penarth, Glam., for Mr. S. Hansen. Quantities will be supplied after April 3 for a deposit of £1 1*s*. Mr. T. E. Richards, A.R.I.B.A., architect, 82 Queen Street, Cardiff, and at Pontypridd.

WALES.—March 29.—For erection and completion of public lavatories and fire-hose station at Caerau, for the Maesteg Urban District Council. Deposit 10*s*. 6*d*. Mr. S. J. Harpur, M.I.M. & C.E., architect and surveyor, 32 Commercial Street, Maesteg.

WALES.—March 30.—For erection of a residence, surgery, garage, &c., for Dr. Ryce, Pentrebach, Merthyr Tydfil. Messrs. Johnson & Richards, architects, Merthyr Tydfil.

WALES.—March 31.—For erection of a Council school at Penygroes (accommodation, 250 infants), for the Carmarthenshire County Council. Deposit £1 1*s*. Mr. W. V. Morgan, A.R.I.B.A., County architect, County Education Offices, Carmarthen.

WALES.—April 7.—For erection and completion of proposed Council schools at Llandyfrydog and Ty Mawr, and for additions, alterations, and repairs to the Council schools at Pentraeth, Llanfachreth, Llaingoch (Holyhead), and Llechylched (Bryngwran), for the Anglesey Education Committee. Mr. J. Owen, F.R.I.B.A., county architect, Menai Bridge.

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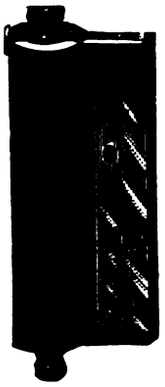
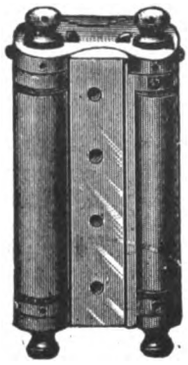
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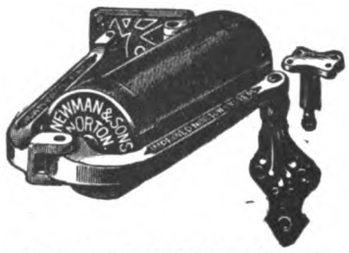
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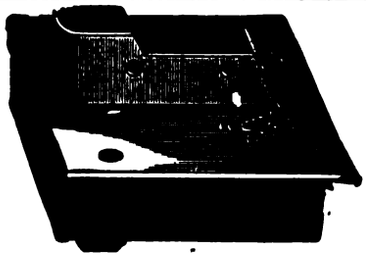
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WEST BROMWICH.—April 9.—For erection of laundry block, engineering block, and chimney stack in Great Barr Park, for the Walsall and West Bromwich Unions Joint Committee. (Mr. G. McMichael, A.R.I.B.A., 105 Colmore Row, Birmingham.) Deposit £3 3s. Mr. A. H. Ward, clerk to the Joint Committee, 22 Lombard Street, West Bromwich.

TENDERS.

HORBURY.

For the erection of a public hall, for the Urban District Council.

Accepted tenders.

Fallas & Sons, masons	£2,110	8	0
Lockwood & Sons, Ossett, joiners	964	12	0
Moore, plasterer	369	0	0
W. Clarke, plumber	310	0	0
Hastings, slater	121	16	0
Bradley & Sercombe, painters	76	9	8

ISLE OF WIGHT.

For erection of a small cubicle ward block in the grounds of the hospital at Fairlee, for the Isle of Wight Joint Hospital Board. Mr. S. R. COCKS, architect, Ryde.

Quinton	£708	0	0
T. & E. W. Jenkins	685	0	0
Brading & Son	676	0	0
A. P. WILLIAMS, Newport (*accepted*)	618	0	0

LONDON.

For the provision of welded tubes required for the new steel rising mains, for the Metropolitan Water Board.

Stewarts & Lloyds, Ltd.	£640	0	0
J. Russell & Sons, Ltd.	620	16	4
T. PIGGOTT & Co., LTD. (*recommended*)	556	0	0

MADLEY.

For equipment of small holdings at Canon Bridge Farm, for the Hereford Small Holdings and Allotments Committee.

Powell & Sons	£1,241	0	0
Peake	1,100	0	0
Field	1,091	0	0
Cooke	1,085	0	0
Preece	1,007	10	0
Pugh	983	15	2
WILKS & SONS, Hereford (*accepted*)	997	8	0
County Land Agent's estimate	997	14	0

PETERSFIELD.

For carrying out the Liss drainage scheme, for the Petersfield Rural District Council.

PERCY TRENTHAM & Co., Birmingham (*accepted*)	£7,740	0	0

READING.

For the construction of a new timber bridge across the Portman Brook at the Institution, 344 Oxford Road, for the Guardians.

McCarthy E. Fitt	£137	0	0
Tucker	135	0	0
Fenton, Son & Co.	117	10	0
Phillips & Son	116	0	0
Allaway & Co.	112	0	0
Allen & Sons	109	9	0
COLLIER & CATLEY, LTD., Reading (*accepted*)	108	0	0

WIRRAL.

For carrying out the Eastham Rake Sewage Works, for the Wirral District Council.

C. L. WARREN, Seacombe (*accepted*)	£2,438	0	0

THE Port of London Authority have, during the last few weeks sanctioned the provision of a large amount of extra accommodation at their docks, including the construction of two sheds on the north side of the South-West India Dock, two sheds at the Tilbury Docks, and three additional floors to No. 1 Warehouse, West India Dock, and the conversion of some disused covered sidings at the Millwall Dock into a shed. The total area of the new floor space will be 350,000 square feet, equal to a storage capacity of 35,000 tons, and the cost to the Authority will be £90,000. A large part of the new accommodation is due to be completed within two weeks from this date, and the whole of it will be finished within two months.

PAINT TRADE AND THE WAR.

A TYPICAL industry in which Germany must lose heavily through the war is that which is concerned with the production of painters' colours and materials. In 1912 (says the *Globe*) Germany exported to all destinations painters' colours and materials to the value of £3,162,000. This country was by far the best customer of Germany for these goods, the exports to the United Kingdom being £791,000, or 25 per cent. of the total. This market is now lost to Germany, and the loss is likely to be a permanent one, as British paint and colour manufacturers are now successfully making almost all the materials which have hitherto been supplied from the Continent. The result will be that some £400,000 a year which has heretofore gone in wages to German workers will now be paid to our own people. It may safely be assumed that Germany's paint and colour trade with British possessions, which amounted in 1912 to over £80,000, will now be transferred to this country. It is also reasonable to suppose that our manufacturers will be able to capture a large proportion of Germany's trade with France in similar goods, amounting to £180,000, and with Russia, amounting to over £150,000. Germany is also cut off from the United States market, to which in 1912 she sent paints and colours to the value of over £300,000, and from the South American markets, to which her exports of the same class were of the value of £120,000. In these markets British manufacturers have openings and opportunities such as they never had before, and are not likely to have again. It is incumbent upon them both from a personal and a patriotic standpoint to do their best to replace German goods by British in all these countries. The result will be not only to deal a blow at Germany's commerce, and thus weaken the resources of the enemy, but to give employment to our own people, and thus mitigate to some extent the hardships of the war. It must not be supposed, however, that German trade in paints and colours can be captured, much less retained, by us without a strong organised effort. German competition will arise once more, keener than ever, when the war is over, and the endeavours of our manufacturers must be directed towards supplying the wants of these markets so completely and satisfactorily that there will be no inducement to purchase German goods. If we are to be successful we must adopt the best features of German methods.

THE LATE MR. H. J. AUSTIN.

MR. HUBERT JAMES AUSTIN, principal of the firm of Messrs. Austin & Paley, architects, died on Monday last at the Knoll, Lancaster, in his seventy-fourth year. Mr. Austin was the youngest son of the late Rev. Thomas Austin, M.A., rector of Redmarshall, Durham, and was educated at Richmond School. In 1864 he completed articles with his brother, the late Mr. Thomas Austin, of Newcastle-on-Tyne, and subsequently entered the office of Sir Gilbert Scott. Here he remained until 1867, in which year he entered into partnership with the late Mr. Edward Graham Paley, of Lancaster. The firm of Paley & Austin, or, as it is now styled, Austin & Paley, is known throughout the North of England. Hundreds of churches in the North and Midlands have been erected and restored from its designs, and it has also been responsible for many notable public buildings and charitable institutions, among them the Royal Albert Institution, and the Storey Institute and Infirmary at Lancaster; and among the most important of Mr. Austin's designs were those of the St. George's Church, Stockport; Mossley Hill Church and Waterloo Church, Liverpool; St. Mary's, Widnes; Starbeck Church, Harrogate; and Thornbury Church, Bradford. He was also architect for Sedbergh School, the Leeds Grammar School extension, and the Giggleswick School. In 1865, by permission of Sir Gilbert Scott, Mr. Austin's competition designs for Christ Church, Ashford, Kent, were utilised. Mr. Austin also won the first premium given in 1873 by the Carlisle Diocesan Church Extension Society, out of fifty-six competitors. Designs by Messrs. Austin & Paley were included in the five sets from which the final selection for Liverpool Cathedral was made in 1903 by Messrs. G. F. Bodley and R. Norman Shaw. Mr. Austin was an earnest church worker and musician. He married in September 1870 the only daughter of the late Dr. James P. Langshaw, of Lancaster, a niece of his partner, Mr. Paley. Mrs. Austin died only three weeks ago. Two sons and three daughters survive. The younger son, Lieut. G. L. Austin, has been granted a commission in the 4th Battalion Loyal North Lancashire Regiment.

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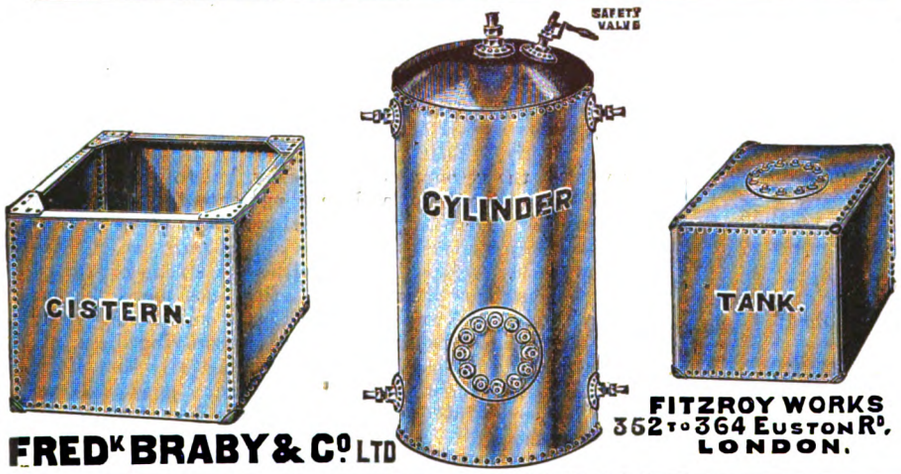
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PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 25,271. Nov. 5, 1913.—H. A. Taylor and the British and Colonial Lighting Co., Ltd., Simpitrol Building, 216 Tottenham Court Road, W.C. Apparatus for carburetting air or the like for lighting and heating purposes.

25,825. Nov. 11, 1913.—S. W. Wilkinson, Little Holme Street, Leicester, and Cohune Machinery Syndicate, Ltd., 13 Copthall Avenue E.C. Apparatus for washing and grading gravel, sand, and the like.

3,897. Feb. 14, 1914.—L. G. J. Bratt, 3 York Road, West Norwood, and J. A. Getty, 64A Stondon Park, Honor Oak, S.E. Domestic fire grates.

4,881. Feb. 24, 1914.—H. L. Lewen, 220 West 42nd Street, New York. Manufacture of plates for building purposes.

4,870. Feb. 25, 1914.—H. J. Jackson, 84 Terrace Road, Upton Manor, Plaistow, E. Callipers.

4,925. Feb. 25, 1914.—C. H. Wragg and John Brown & Co., Ltd., Atlas Steel and Iron Works, Sheffield. Grinding plates used in tubular ball mills and like for grinding cement, clinker, and similar materials.

4,928. Feb. 25, 1914.—T. G. Park, Fassio Works, Argyle Place, Cromer Street, Gray's Inn Road, and F. R. Hill,, Paxton House, Bath Road, Reading. Manufacture of artificial marble.

4,943. Feb. 25, 1914.—M. A. V. London, Warwick House, Gunnersbury Lane, Acton Hill. Electrical heating apparatus.

5,130. Feb. 27, 1914.—A. W. Chapman, 16 Enmore Road, Putney, S.W. Guards and the like for locks.

5,203. Feb. 28, 1914.—F. F. Neall, 6 College Mansions, Sydenham Park, S.E. Ladders.

5,242. Feb. 28, 1914.—J. H. Ames, 1521 Chestnut Street, Philadephia. Cement.

5,442. March 3, 1914.—C. E. Stanley, 75 Thornbury Road, Birchfields, Birmingham. Drawing pins.

5,914. March 9, 1914.—C. M. Eberling, 5810 Bridge Avenue, Cleveland, Ohio. Manufacture of bricks, blocks, tiles, and the like from plastic materials.

5,980. March 9, 1914.—James Cornes and H. M. Cornes, 240 High Holborn, W.C. Ranges, coppers, and hot-water supply for baths and other domestic purposes.

12,746. March 23, 1914.—W. O. Teasdale, Fort Mills, Corregidor Island, Philippine Islands. Electric light pendants.

13,257. May 29, 1914.—Andrew Sweet, Butleigh, Friern Lane, Whetstone, N. Locks.

17,832. July 28, 1914 (dated under International Convention Aug. 20, 1913).—J. H. A. Mialaret, Professor of Architecture, 11 Breede Straat, Maastricht, Netherlands. Proportional compasses for perspective drawing.

11,012. May 5, 1914.—William Lavender, Cannons Lane, Pinner, Middlesex. Sewage distributors for filter beds.

25,665. Nov. 10, 1913 (dated under International Convention Dec. 25, 1912).—J. A. Balfour, Trincomalee, Ceylon. Reinforced concrete construction.

17,474. July 23, 1914.—S. E. Aspland, 15 Fitzalan Road, Handsworth, near Sheffield. Scaffold ties.

Any of the above specifications may be obtained from J. D. Roots & Co.

THE BUILDING TRADE.

MR. E. F. HARMER, F.S.I., in a paper prepared for the Southampton Chamber of Commerce, observes:—

It seems to me that if we, as a nation, are going to do the very utmost for ourselves during the remainder of the war it would be as well to take a general survey of the conditions likely to prevail during that time. At present there are many signs that persons who would build under normal conditions are waiting until the cessation of hostilities before commencing. This in many cases is a mistake, as there are many evidences that the cost of materials will increase considerably after the war. In January 1915 the only building materials that have shown any considerable increase in cost are timber, glass, and lead. At the moment of writing these increases are as follows: Timber, 25 per cent.; glass, 120 per cent.; lead, small and uncertain. The reasons for the increase in the cost of timber are the great demand by the War Office and slightly decreased shipments owing to the war. In the case of glass, our chief supplies came from Belgium and Germany, and this source is for the present cut off. Lead need not trouble us at all, as there are several excellent substitutes. Now let us see how these variations affect the ordinary contracts. Take first a dwelling-house costing £1,500. In this house there are 1,800 cubic feet of timber; an increase of 6*d.* per foot amounts to £45, and 677 super feet of glass at an increase of 6*d.* amounts to about £17, making a total of £62 on the cost, or about 4 per cent. increase. We now take a shop and stores in the centre of the town, costing £5,000; it actually requires 3,900 cubic feet of timber, amounting to an increase of £98, and 1,339 super feet of glass with an increase of £30. Total, £128, or 2½ per cent. on the total. Our next example is a large factory, where as little timber as possible has been used, costing about £50,000. On 6,015 cubic feet of timber the extra would be £150, and on 57,000 super feet of glass £724. Total, £874, or not quite one-sixth of 1 per cent. This low additional cost being due to the small amount of timber used, and as a result the building is practically fire-proof. Estimates for small residences since the war show an increase of slightly under 9 per cent., and it is necessary to relax restrictions as to time of completion by granting an equitable allowance for delays beyond the control of the contractor. Let us now examine the conditions likely to prevail after the war. In the first place, owing to the terrible destruction of property in Poland, Belgium, and France, immense quantities of iron, steel, cement, bricks, timber, and glass will be required to rebuild not only houses and business premises, but, most important of all, factories, because until trade is re-established in these countries there will be a dreadful state of unemployment and want amongst the working classes. Now this extraordinary demand is bound to affect prices and cause shortage of supplies, and in order that we, as a nation, should reap the greatest benefit, and also give the greatest assistance to our Allies, we must be first prepared to deal with this demand, and consequently our manufacturers should be encouraged to extend and rebuild or reorganise their factories before that demand becomes acute, or the consequence will be that Germany will reap benefit by her wrong-doing, because when peace is declared cost will still be the great factor in business, and not sentiment. It is necessary to keep the building trade going, and those persons who think that they will build more cheaply after the war will be liable to a sad awakening.

VARIETIES.

THE London Master Builders' Association is now affiliated to the London Chamber of Commerce.

THE Royal Academy annual dinner, usually held to celebrate the opening of the summer exhibition, will not take place this year. The exhibition will be held as usual from May to August.

MESSRS. C. H. HUNT & SON, of High Wycombe, have received a £20,000 contract from the London and North-Western Railway Company for the construction of buildings for housing carriages to be used on the electric line connecting the Bakerloo Tube Railway with Watford.

A FACTORY is in course of erection at Galleywall Road, Bermondsey, S.E. The architects are Messrs. Robinson & Roods, and the contractors Messrs. Wm. F. Blay, Ltd., London and Dartford.

MESSRS. ALLEY & M'LELLAN, LTD., of Glasgow, have taken ground in the vicinity of Shrewsbury for the erection of motor works. The factory will begin with about 300 artisans, and it is expected will ultimately have 1,000 employees.

THE Admiralty have let to Mr. John Martin, of Dunfermline, a contract for the construction of roads and pathways and the laying of drains, all in connection with the works and residences to be erected at Rosyth. The value of the contract is £10,000, and its completion is to be expedited.

MR. H. E. STEWART, Local Government Board inspector, held an inquiry at Margam Council Offices, Taibach, Port Talbot, on the 22nd inst., into the application of the Council for sanction to borrow £9,703 and £5,254 for the erection of houses at Bryn and Taibach respectively. Mr. John Cox, surveyor, produced plans and estimates. It is proposed to erect twenty-four houses at Taibach, near the site of the old market. At Bryn it is proposed to erect forty-seven semi-detached houses. There was no opposition to the schemes.

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A DISCUSSION has recently been raised in the pages of the weekly and daily Press as to the exact height of St. Paul's Cathedral, and authorities have been quoted as giving the height, from the level of the Cathedral floor to the top of the cross, in figures varying from 340 ft. to 404 ft., or even more. These doubts are now laid to rest by a statement by Canon Alexander, the treasurer of St. Paul's, to the effect that very careful measurements have just been made by the Cathedral staff showing that the height from the floor to the cross is 355 ft. 6 in. It should be remembered that the level of the Cathedral floor is several feet above the surrounding ground, and this, again, several feet above the level of the crypt.

THE Council of the British Association, in consultation with the local Executive Committee at Manchester, has decided that the annual meeting of the Association shall take place in that city as arranged in September next. Both the committee and the Council have felt that it would be inexpedient under the present conditions to offer the elaborate local hospitality which has been extended to the Association on former occasions. The committee, however, expressed its desire that the long continuity of yearly meetings should not be broken, and stated that it would prefer the meeting should be held, although restricted to its more scientific functions.

THE Exeter City Council have again under consideration the fate of the old house in King Street, with twelfth century features, which it had been resolved to demolish. The town clerk has reported to the Estates Committee that Mr. Sirr, inspector to H.M. Department of Ancient Monuments and Historic Buildings, had visited the house, and would make a report. A letter had also been received from Mr. A. R. Powys, secretary of the Society for the Protection of Ancient Buildings, stating that they could hardly believe the repair of the building would cost £500, as estimated. The City Council's committee has accepted his offer to submit a detailed report.

THE Executive Committee of the Irish branch of the Surveyors' Institution met last week. The committee, having considered correspondence with the parent institution on the subject of scales of fees for professional use, decided on the publication of a scale under the authority of the Irish branch. An application from the Quantity Surveyors' Sub-Committee to issue a memorandum defining the functions and duties of quantity surveyors in their employment for the preparation of bills of quantities, and their relationship to the employer, architect or engineer, and the contractor, was received and sanctioned. Arrangements for the annual meeting were made, and the date fixed for Thursday, April 15, at 11 o'clock, at 110 Grafton Street, Dublin, when the report and accounts for the past year will be submitted and the election of officers held.

THE President of the Board of Education has sanctioned an arrangement by which the bronzes presented last autumn to the Victoria and Albert Museum by Monsieur Auguste Rodin will be lent to the Royal Scottish Academy (of which Monsieur Rodin is an honorary member) for inclusion in their annual exhibition in Edinburgh this summer. The bronzes will be withdrawn from exhibition in London at the close of this month. It is proposed that an exhibition of the work of the Serbian sculptor Ivan Meshtrovitch should be held in the Victoria and Albert Museum during the summer by arrangement with the Serbian Government.

"ENGLISH Clubs," a list of over 4,000 clubs frequented by the English in all parts of the world, for 1915, has been published by Messrs. Spottiswoode & Co., Ltd., and is edited by Mr. E. C. Austen Leigh, M.A. The book, which has been thoroughly revised this year, is handsomely bound in red cloth and printed in tabular form. It gives much information about each club; for instance, it notes the names of secretaries, dates of establishment, entrance fees and subscriptions, and has, in some cases, remarks on the qualifications for membership, &c. There are included in it, of course, London and provincial clubs in England, and a special feature is made of those in the Colonies, India, and on the Continent, besides which some 2,000 golf clubs are mentioned and 500 ladies' clubs. The price of this work is 5*s*. Post free, 5*s*. 3*d*.

PROFESSOR LODGE, who was appointed arbiter by the Industrial Commissioners in the dispute between the builders' labourers in Edinburgh and Leith, issued his decision last week. The men's demand was for an increase of 1*d*. an hour on the present rate of 6*d*., and an agreement guaranteeing the increase till June 1916. The points at issue were discussed at a meeting of the representatives of the masters and men, which was attended by the Professor. Professor Lodge's award is to the effect that the minimum rate of wages for builders' labourers in Edinburgh, Leith, and district shall from this date be 6½*d*. per hour; that this rate shall remain in force until March 1, 1916, and shall continue after that date unless, before March 1, either party shall have given notice of a proposed alteration.

THE Incorporated Church Building Society held its usual monthly meeting on the 18th inst. at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W. Grants of money were made in aid of the following objects, viz.: Building a new church at St. John the Baptist, Belmont, Surrey, £130 for the first portion; rebuilding the church of St. Symphorian, Durrington, Worthing, £60 for the first portion; and towards enlarging or otherwise improving the accommodation in the churches at Abington, St. Peter and St. Paul, Northants, £80; Croughton, All Saints, Northants, £30; Hoxton, St. Anne, Middlesex, £75; and Leonard Stanley, St. Swithin, Glos., £60. Grants were also paid for works completed. In addition to this the sum of £100 was paid towards the repairs of eleven churches from trust funds held by the Society. The Committee appeals for immediate support, as even amidst the untoward circumstances of the day heavy demands are made upon the slender resources of the Society.

TRADE NOTES.

MESSRS. DANIEL WATNEY & SONS, auctioneers and surveyors, are transferring their offices to No. 4A Frederick's Place, Old Jewry, E.C., as from the 25th inst., the lease of their premises at 33 Poultry having expired.

THAT many architects are adopting a Pudloed cement treatment when they require waterproof conditions is evidenced by the reports we constantly receive. The architects who have control over the works at Hawkmoor Sanatorium have specified large quantities of Pudlo for the concrete and the topping on same.

THE architects for the Somerset Education Committee recently waterproofed the cement concrete playground of the new school at Langport with Pudlo. Many concrete flat roofs are being made watertight with a rendering of Pudlo and cement. A large flat erected at Blackpool (Shaw's depository) was finished about nine months ago, and we understand that both contractor and architect consider the treatment a great success.

THE twenty-third annual general meeting of the shareholders of Messrs. Fletcher, Russell & Co., gas-stove manufacturers, iron-founders, &c., was held at the Palatine Works, Warrington, last week. Mr. George Perkins presided. An interim dividend on the preference shares at the rate of 6 per cent. for the half-year ended June 30, 1914, was approved, and a final dividend at the same rate for the six months ended December 31 last was also declared. A dividend on the ordinary shares of 5 per cent. and 2½ per cent. bonus was also declared. The reserve fund now stands at £18,862, and the balance carried forward to next year was £5,485.

MESSRS. T. PARTRIDGE & Co., Walsall, are known not only for their Belfast roofs, but also for their very adaptable "Elite" system of leaded glazing, of which many thousands of feet have been erected in this country. On the score of price they challenge comparison with any other efficient system which claims to be absolutely watertight, dustproof, non-corrosive, proof against internal wind pressure and vibration. A special point is made of the simplicity of fixing the glass and of replacing it. The firm guarantee any glazing work they carry out themselves; but they are also prepared to supply the wood bars complete with lead cap, &c., if customers prefer to do their own fixing.

MESSRS. E. H. SHORLAND & BROTHER, LTD., of Failsworth, Manchester, have recently carried out the following contracts: The Biscovey New Schools, Cornwall, and Gronant New Schools, are being supplied with warm-air ventilating patent Manchester grates; the Paxton School, Berwickshire, is being ventilated by Shorland's exhaust roof ventilators and special inlet ventilating tubes; the extensions to the Infirmary, Bury, are being supplied with Shorland's Manchester stoves with descending smoke flues; the extensions to the Bucknall Isolation Hospital are being supplied with double-fronted patent Manchester stoves and ventilators; and the Children's Home, Nuneaton, is being ventilated by means of Shorland's patent exhaust roof ventilators.

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THE ARCHITECT

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CONCRETE ROADS.

The advent of the motor-car and the motor-driven lorry for heavy traffic has evolved a new problem for road makers. Macadamised roads, which for many years have been the standard type for all but our busiest town streets, no longer fulfil all the conditions demanded by motor traffic. A loose-bound road surface is, in fact, no longer satisfactory; for rapid traffic with broad-tired wheels has a tendency to tear out the metal even from a compact road surface, to produce greater attrition between the particles of macadam, and thus to produce the distressing clouds of dust which have become the annoying characteristic of those country roads that have become favourite routes for the motor-car. Roads of asphalte, granite setts, or wood blocks, are too expensive for general adoption throughout the country. Hence has arisen the practice of tar-spraying with which we are now familiar to reduce dust and provide a better bound road surface.

It is interesting, therefore, to learn that at the present time six experimental sections of concrete roads are being laid on the London-Dover Road, adjoining the southern boundary of the Gravesend Borough, in the county of Kent, by the Kent County Council, under arrangement with the Road Board.

The ideal road-surface should be of a character that will prevent slipping, and be free from waves, and without joints or cracks. Of the paving materials available, concrete more nearly meets these conditions than any other. Since concrete has little tensile strength, it is inelastic, and cracks may develop from the following causes: (*a*) changes in temperature; (*b*) variation in the percentage of moisture in the concrete; (*c*) defective foundation; (*d*) improper drainage; (*e*) insufficient thickness in slab to carry the traffic; (*f*) faulty construction.

It is necessary, therefore, in a road properly designed and constructed, to minimise the cracks resulting from the above causes by making provision for expansion and contraction, and, generally, by embedding a reinforcement in the concrete which will so distribute the tensile stresses as to prevent the formation of large cracks. It is probably true that all concrete roadways should be reinforced; and undoubtedly, regardless of width, a reinforced concrete roadway is superior to any other form of road of equal cost. Through the proper use of reinforcement the cost of a concrete pavement may be decreased, and the cracks so distributed as to be practically invisible, thereby preventing objectionable breaks in the surface and decreasing the cost of maintenance.

In the United States concrete roads have now been in use for about five years, and considerable experience has been acquired with regard to both their initial construction and their upkeep. In England one of the first reinforced concrete roads was laid in Robert's Lane, Saltney, on the outskirts of Chester, in 1913. In this road the thickness varied from 6 inches to 8 inches. For a year the road remained without any repair; then the road was tar-sprayed and sprinkled with granite chippings. After another year the surface was again treated in the same manner. In regard to this road, Mr. W. Matthews Jones, borough surveyor of Chester, who has been elected President of the Institution of Municipal Engineers for the year 1914-15, said in his presidential address:—"I have recently been, and still am, carrying out experiments in another direction of road-making—viz., armoured concrete roadways—which have, up to the present, given the greatest possible satisfaction. . . . It is not fair to compare prices of various classes of roads, as the price one surveyor pays for his materials may not be the same as that paid by another surveyor; but I can give an actual comparison between a reinforced concrete road and an ordinary water bound macadam road on a 9-in. rock or brick pitched foundation in Chester. The reinforced concrete road, 6 inches of concrete being used, and afterwards tar-sprayed, costs to lay 3*s.* 11*d.* per super yard, and the water-bound macadam costs 6*s.* 10*d.* per super yard, exactly the same price being paid for the broken granite used to form the matrix in both cases."

The figures quoted by Mr. Matthews Jones seem to show conclusively that, under similar conditions, the initial cost of a reinforced concrete road is considerably less than that of macadam. Experience in England has not as yet been of sufficiently long duration to enable comparison to be made in respect of maintenance, and this is a point which the Road Board have prominently before them in arranging with the Kent County Council for six different samples of concrete road construction. These are: (1) Portland cement concrete, 6 in. thick, with expansion joints every 25 ft.; centre joint reinforced with expanded metal 3 ft. wide. (2) Portland cement concrete, 6 in. thick, with expansion joints every 25 ft.; centre joint reinforced with expanded metal 3 ft. wide; the surface dressed with refined tar and limestone chippings. (3) Portland cement concrete, 6 in. thick, reinforced with steel bars supplied by the Indented Steel Bar Co., with expanded joints every 28 ft.; the surface to be dressed with refined tar and limestone chippings. (4) Portland cement concrete, 6 in. thick, reinforced with metal supplied by the Expanded Metal Co., with expansion joints every 28 ft.; the surface to be dressed with refined tar and limestone chippings. (5) Portland cement concrete, 6 in. thick, reinforced with triangle-mesh steel wire supplied by the United States Steel Product Co., with expansion joints every 28 ft.; the surface to be dressed with refined tar and limestone chippings. (6) Portland cement concrete, 6 in. thick, reinforced with the British Reinforced Concrete Engineering Co.'s B.R.C. fabric, with expansion joints every 28 ft.; the surface to be dressed with refined tar and limestone chippings.

In the United States the five years' experience already gained points to the advisability of inspecting the roadway twice a year and filling with a mastic, such as Tarvia X, all defects. The cracks are swept out clean with wire brooms, the mastic heated to about 225 degrees Fahr. poured in by hand, dry, coarse sand spread with a shovel over the crack and into the tar. It is important that such repair should be done when the concrete is dry and the weather fine and warm. Patches can be put in when the road has been disturbed for installing service pipes, such as sewers, gas and water, by cutting a clean hole and filling with the original mixture of concrete.

We all know nowadays that concrete on large surfaces, exposed to the weather, is liable to a considerable

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amount of expansion and contraction, and that precautions must be taken in consequence, whether in roofs or pavements. Careful observation on experimental concrete roads in America has established the fact that the swelling and shrinking of concrete with changes in moisture is far greater than its expansion and contraction with changes in temperature. Concrete, in fact, expands and contracts every time it is wetted and dried, just like a piece of timber, though, of course, not to the same degree. It would appear that 25 feet is about the limit beyond which dimensions of a road should be intersected by expansion joints, but when reinforcement is introduced this limit may be extended, or, in the opinion of some experts, expansion joints may be omitted altogether.

Like all works in concrete, the road requires careful attention to details of workmanship; the aggregates should be clean and hard; the sand should be coarse and well graded; a rich mixture should be used; the materials should be correctly proportioned and thoroughly mixed, the concrete should be of a viscous, plastic consistency; the foundation should be of uniform density, thoroughly compacted and drenched with water immediately before the placing of the concrete; and, finally, it is most important that, after placing, the concrete should be immediately covered, preferably with sand, and kept moist, and not opened to traffic for four weeks, thus preventing too rapid drying or the subjection to strain whilst the concrete remains green.

In the specification for the experimental sections of the road in Kent, the concrete is required to consist of six parts of crushed ballast and sand and one part of Portland cement. Twenty-five per cent. of the aggregate is to pass through a 1-inch screen and be retained on a half-inch; 25 per cent. to pass a three-quarter-inch, and be retained on a three-eighth inch; 25 per cent. to pass a quarter-inch and be retained on a 22 screen; 25 per cent. to be clean, sharp sand, all to pass through a three-sixteenth inch screen.

An objectionable glare, due to the sun shining on a white concrete roadway, has, naturally, been experienced to a greater extent in the United States than would be probable here, and to obviate the discomfort the experiment has been tried of treating a portion of road with a crude water-gas tar at the rate of about one gallon to ten square yards. This penetrated the concrete to such an extent that the surface acquired a dark-brown colour. There was not sufficient material to form a mat, and it does not appear that the treatment is of any value in protecting the concrete surface from wear.

Concrete may be used not only for the road surface, but also for curbs and channels, and examples of this latter employment may be seen at Northfleet, Kent, where they have proved satisfactory in use for many years past.

NOTES AND COMMENTS.

IT is gratifying to know that the overlapping of effort threatened by the separate activities of the Garden Cities and Town-Planning Association and the Town-Planning Institute in regard to the rehabilitation of Belgium, is now likely to be obviated by the collaboration of these two bodies of experts. In the multitude of counsellors there is wisdom, but when they work in separate groups there is apt to be confusion, and a new committee composed of representatives of the two bodies is likely to be more effective than two distinct bodies.

The new committee is working with the support of the Belgian Government, and contains representatives of several Belgian departments, the Royal Institute of British Architects, and other societies. During next week an exhibition will be opened to illustrate the present condition and needs of Belgium, including plans, views, and photographs of the country, both as it was before the war and as it is now that the Germans have done their worst with it. There will be a historical series illustrating the development of the cities of the Netherlands, and a collection of examples of town-planning likely to be useful in showing the way to lay out the ravaged districts on improved lines. There will be conferences on the subject in London and other cities. It is recognised that the replanning of Belgium is essentially a work for the Belgians themselves. "Study groups" are being formed of nominees of the Belgian Government and architects among the refugees in this country, assisted by British professional men. The School of Architecture and Town Planning at University College has been placed at the disposal of these study groups.

The underground water of London is a matter of which too little heed is taken. Not only is there a considerable amount which is being tapped by so-called artesian wells, but there are numerous underground streams at levels very much nearer the surface than the depth to which the wells are sunk. In an address at the Royal Institution on "The Ground Beneath London," Mr. Aubrey Strahan, Director of the Geological Survey of Great Britain, devoted his attention chiefly to what we may call the well water, and stated that London was clearly living beyond its means as regards the water supply. Wells might, indeed, be sunk in many places, but the practice was attended with considerable danger owing to the consequent shrinkage of the soil. The borings necessary for the tubes had caused justifiable alarm on the part of the Chapter of St. Paul's Cathedral. He had noticed that St. James's Church in Piccadilly was falling out of the perpendicular, probably from the same cause. Clay had a curious property attached to it: it shrank and expanded as it grew dry or moist, and in the process it crawled like a caterpillar—down hill if possible.

Architects and builders must suffer during the war by the decision of the Lords Commissioners of His Majesty's Treasury to restrict capital issues by local authorities within the narrowest limits, and the injunction of the Local Government Board by circular letter that labour should be economised by local authorities as far as possible, and that the inception of new works, except such as are of pressing necessity, either for reasons of public health, or on account of war requirements, should be avoided.

With respect to the statement in the Board's circular letter, to which reference is made above, that it has become necessary to avoid the inception of all new works except such as are of pressing necessity, either for reasons of public health or on account of war requirements, it must be understood that these terms will be construed in their strict sense.

Consequently, before any application is made to the Board with a view to the immediate execution of works, local authorities should fully satisfy themselves that they can show that the expenditure cannot be avoided, postponed, or reduced. Any application should be accompanied by a statement of the facts upon which the local authority rely to prove these points.

The Treasury are anxious that the attention of local authorities should be particularly drawn to the fact that economies and restrictions on borrowing are possible, not only as regards new works, but also as regards works in progress. As regards these latter, it will frequently be found possible by arrangement with contractors or otherwise to postpone works, or parts of them, or to enlarge the period allowed under contract for their completion. In any case in which an application for sanction to this Board or to the Treasury is necessary, where works are in progress or are the subject of a contract, it will be necessary to demonstrate that every possible effort has been made in this direction before the extent of the application has been finally determined upon.

The other side of the picture is presented by a paragraph in the *Staffordshire Advertiser*, which says: "It is expected that with the arrival of the soldiers at the camp on the Chase there will be a demand for house

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accommodation in Rugeley and other towns in the neighbourhood. At Cannock the authorities have been instituting inquiries as to the number of men it would be possible to billet there, but so far the police at Rugeley have received no instructions. It is probable that relatives and friends of the officers stationed at the camp will come to visit them, and as Rugeley is within easy distance of Penkridge Bank, these visitors will probably look for quarters in the town. Unfortunately, there is a great scarcity of houses in Rugeley, and there seems to be no prospect of an improvement for some time to come. A proper housing scheme for Rugeley has long been thought of and discussed by those in authority, and now, when it seems imperative that such a scheme should be put in hand, the Local Government Board have intimated that they cannot grant loans for house planning of any description during the war."

Lecturing at the Camera Club on the art of Western Europe as affected in the war, Mr. Maurice Brockwell said that German culture was singularly backward in respect to painting. Even in her best period Germany had no painters above the third rank. Germans were, however, very keen art connoisseurs on the business side. They had art spies—he had met them personally—just as they had military spies, and it was owing to this that our own National Gallery had lost a great deal of its former superiority to the gallery in Berlin. Indeed, our own collection was now only 1 or 2 per cent. better than the Prussian, and out of twenty-six Rembrandts in the Berlin gallery eleven were formerly in private collections in England. One boast, however, might be made for our own National Gallery—namely, that it now contained not a single picture which had been seized in war. On the other hand, a century ago no fewer than 119 paintings were wrested from the Louvre for Prussia alone, not to speak of those which went to other parts of Germany.

Mr. A. Horsburgh Campbell, Burgh Engineer, in his annual report to the Public Health Committee of the Town Council of Edinburgh, upon the observation and abatement of smoke nuisances during the past year, emphasises the following particular points:— "(1) That the need for continued observation continues unabated, notwithstanding the fact that during the year into several of the large works there have been introduced smoke-consuming appliances with markedly beneficial result. At one of the largest works in the city the apparatus has involved the firm in an expenditure of several thousand pounds; but this outlay has already yielded a resultant asset in the reduced coal bill, and a decided diminution of smoke discharge. On a smaller scale, though with a like result, the introduction to other works of efficient smoke-preventors has been done at a very low—indeed, in comparison with the benefits, almost nominal—cost. In this work of sanitary reform the Corporation has had its share, on at least one public institution, at a very modest outlay. The observations since made show the transformation effected. It is hoped that those examples —obtained only after much effort—may induce their application over the whole of the Corporation establishments, and to this end our efforts will continue, with the help and backing of the Public Health Committee. (2) There is a natural reluctance on the part of factory owners to incur expenditure upon devices of an untried, and it may be, inefficient kind; but our recent experience goes to show that this fear is not now well founded. We hope, therefore, while showing patience where honest effort is being made, and doing nothing to hinder the carrying on the industries of the city, to keep pegging away in this effort to diminish the smoke of the city. Among the works which give the greatest trouble are breweries, hotels, restaurants, laundries, and power stations. To none of these has there yet been introduced any satisfactory smoke preventive. The standard allowance by the Committee of six minutes' black smoke per hour is of too rigid a kind, operating unequally to the larger works and over-indulgent to the small work. Recent experience proves that the effectual consumption of smoke is quite compatible with the efficient and economic working of the steam boilers. The growth of gas for heating and cooking, and the adoption of electric current for power in many of the city works and factories, are factors of much account in this crusade against the needless and wasteful discharge of smoke."

WAR ITEMS.

In connection with the campaign undertaken by the Board of Trade, on the advice of their Advisory Committee on Commercial Intelligence, to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and list 13 of articles which inquirers desire to purchase is now ready, and may be obtained by United Kingdom manufacturers and traders.

British firms interested, as suppliers, in any of the goods mentioned should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

R.I.B.A. EXAMINATIONS.

The Board of Architectural Education announce that the designs submitted by the following students have been approved:—

Subject XIX.—(*a*) *A Memorial to Lord Roberts.*—R. C. Arnold, C. J. Brandon, J. C. C. Bruce, R. W. Carey, G. R. Cottingham, N. F. C. Day, R. A. Duncan, T. C. Evans, S. C. Foulkes, R. D. Graham, H. St. J. Harrison, M. Hendry, V. Hull, L. D. H. Hutton, A. B. B. Jopling, W. J. Knight, J. Scott Lawson, D. R. Lyne, C. H. Mitchell, G. Munguia, F. Riexa, T. A. Sanders, W. N. Spence, F. J. Stevens, G. P. Tubbs, W. C. Vonberg, A. G. Wood, and F. P. M. Woodhouse.

(*b*) *A Garage for a Large Country Mansion.*—L. D. A. Church, J. Dickinson, W. Doddington, J. R. Edwards, P. J. Gordon, W. Holden, N. Keep, C. H. Mitchell, A. T. Philp, C. S. Picton, E. W. Roberts, M. C. Sunter, A. S. Tanner, and G. Vinden.

Designs for other subjects, from the following candidates, have also been approved: A. D. Kellock, H. N. Fisher, G. Hemm, and I. Omar.

ILLUSTRATIONS.

KEMNAL MANOR, CHISLEHURST.

This house occupies the site of the old Manor House, the earliest existing record of which dates back to 1250. The present owner, Mr. James H. Rosenthal, purchased the estate in 1911, comprising 111 acres of land, and extended and modernised the house. The drawing-room was added to, making this room 45 feet by 20 feet. Additions were made to the library and music-room. The lounge hall and music-room are panelled in oak, and the dining-room in mahogany. A new oak staircase leads out of the hall to the first floor, and a wide gallery runs all round the hall, serving all the principal bedrooms. The bedrooms on the first floor are arranged in suites with dressing-rooms and bathrooms attached to each. The elevations of the house were built of brick, and when the alterations were made these were rough-casted and treated with half timber, giving the house a more interesting character. The architect was Mr. Victor Wilkins.

"SUTHERLANDS," HARROW.

This is a typical example of the modern suburban house when designed by an architect, who, in this instance, was Mr. Anthony R. Barker.

OXFORD CATHEDRAL.—FOUNTAIN COURT, HAMPTON COURT PALACE.

With these two drawings we complete our record of the work done by Mr. Chas. S. Carter during his tenure of "The Architect" Travelling Studentship in 1914.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the Royal Institute of British Architects was held on Monday last, the 29th ult., Mr. A. W. S. Cross, F.R.I.B.A. (Vice-President), in the chair.

Mr. E. Guy Dawber (hon. secretary) said it was his sad duty to make the formal announcement of the death of their friend and Honorary Associate, Walter Crane. Though elected to the Royal Institute but three years ago, he was no stranger to the meetings; his presence could always be counted upon when the subject of Art and its applications was in question. The story of his long and distinguished career as a decorative artist, designer, book illustrator, writer, and lecturer on the applied arts has been too recently told to need dwelling upon now. He was an artist of strong individuality and far-reaching influence, holding a high place in the estimation of artists and of the Art-loving public not only in this country, but on the Continent and in America. One of his greatest services to Art was the foundation twenty-seven years ago of the Arts and Crafts Exhibition Society, of which he was for so many years the President.

The following resolution was passed by the meeting: "That the Royal Institute of British Architects desires to express its sorrowful regret at the decease of its distinguished Honorary Associate, Walter Crane, and to place on record its high estimate of his artistic achievements, and its appreciation of his labours in the advancement of art-craftsmanship; it is also resolved that a vote of the Institute's sympathy and condolence be conveyed to his son, Mr. Lionel Francis Crane, Licentiate, and the other members of the family."

Mr. W. A. Pite, F.R.I.B.A., then read a lengthy paper, from which we give extracts, on

KING'S COLLEGE HOSPITAL.

The removal of King's College Hospital to South London marks an epoch in the history of the hospitals of the Metropolis. It was the first occasion in the present century that a large and important London general hospital had the opportunity of starting afresh with a clean slate. Other hospitals had extended their accommodation on an already cramped site, and the Committee of Management of King's College Hospital were brought face to face with the problem of remodelling and improving the old hospital to meet modern requirements. The hospital had rendered yeoman service to the development of medical and surgical science, and the very improvements it had helped to introduce had rendered the building and equipment sadly out of date. In 1893 a Select Committee of the House of Lords, recognising the pressing need for a large general hospital in South London, urged that, at the first opportunity, this should be met, either by a new institution in a suburban locality or by the removal of one of the existing hospitals. The vast improvements that had been carried out in the West Central district of London within the past forty years had resulted in the abolition of vast and squalid rookeries, in which many hospitals had been built expressly for the benefit of the extreme poverty surrounding them. King's College, St. Bartholomew's, Charing Cross, and the Royal Free were the principal hospitals of this group. The improvements attendant upon the building of the Law Courts and the construction of Kingsway had their especial effect upon King's College Hospital; and the Committee of Management, realising the inadequacy of the old building in Lincoln's Inn Fields, both as regards position and efficiency, boldly decided to adopt the recommendation of the Committee of the House of Lords and to rebuild the hospital at Camberwell.

Just as the old hospital was deliberately placed where it was urgently needed by thousands of the very poorest people, so, too, is the new hospital. But changed conditions and modern methods of quick and cheap transit made it possible for the hospital to be built on the outskirts rather than in the centre of such a district. Denmark Hill, a place of old and prosperous associations, took its name from Prince George of Denmark, and is redolent with memories of Ruskin, Byron, Sir Christopher Wren, Robert Browning, Mendelssohn, and many another. It is the borderland between the squalor of Camberwell and the ever-growing residential suburbs on the outskirts of the Metropolis. A high and healthy situation and a proximity to a certain amount of open country, or at least ground covered but thinly by solid houses with large gardens and fields, seemed to indicate it as a most suitable position, and in 1904 the present site was acquired and presented. In size it is approximately just over twelve acres. It is rectangular in shape, and has a gentle slope down from east to west, and a marked fall from south to north of some 15 feet. Ruskin Park, comprising about twenty-two acres, stands immediately opposite the hospital site on the other side of the railway. And it can readily be seen what benefits to the hospital accrue from its proximity to such an open space.

Of the competition held soon after the acquisition of the site little need be said. In March 1908 building operations really commenced. The buildings were proceeded with block by block as the detailed working out of each section was completed. On July 29, 1909, King Edward VII. and Queen Alexandra attended in semi-state, and his Majesty laid the foundation-stone. This was the last public ceremony of its kind performed by King Edward before his lamented death. On July 26, 1913, King George V. inaugurated the building, and in November of that year the first patients were admitted.

Lay-out.

The general contour of the site produced a certain and definite problem, and the solution of this was at once effective and of far-reaching consequence. The ideal hospital site has a general slope towards the south, whereas the site at Denmark Hill had a steep fall in the opposite direction of about 15 feet in the total width of 528 feet.

Certain first principles governed the disposition of the buildings over the site, and the application of these to suit the exigencies of the occasion was a matter of much thought and consideration. The natural position for the wards to occupy was the southern portion of the site, and upon the placing of the Administration Block in relation to the wards hinged, to a great extent, the solution of the problem. It is an interesting fact that, having decided upon the general disposition of the buildings, it was practically impossible to move the central axial lines of the whole scheme more than a few feet either way.

At the time of the competition Bessemer Road existed only on paper, and it seemed natural enough that the Administration Block should take up its position on the main road—Denmark Hill. However, after due trial the present position was decided upon, but it still remained to grapple with the slope of the site. It was found, however, that a floor-line taken from about the highest level of the site—*i.e.* the southern boundary—permitted the inclusion of another floor under on the northern portion of the building. That is (and too great stress cannot be laid on this), by placing the first floor of the Administration Block on a level with the ground floor of the ward blocks, that portion of the Administration not immediately connected with the wards was at once thrown out of direct contact with them and their attendant flow of ward traffic, while that part of the Administration devoted to nursing was placed in a position most convenient for communication with all the wards and their attendant units.

The position of the wards and the Administration Block having been settled, the remainder of the buildings fitted in in almost natural sequence. The proportion of unoccupied land to buildings is as follows: Land, 7.75 acres; buildings, 4.50 acres. The site is divided into two portions, northern and southern, by the main hospital corridor. The ward pavilions themselves occupy the whole of the southern portion of the site, stretching from east to west in an unbroken line, the chapel and central station bisecting this. Not only do the wards benefit by the sun and air, but the patients in them have the full advantage of the pleasant sylvan aspect of Ruskin Park, only separated by the railway cutting. The main hospital corridor at once divides the wards from the rest of the hospital and provides inter-departmental communication.

The central position occupied by the Administration Block permits the minimum amount of distance to be covered in communicating with any of the wards. Had this block been placed on the Denmark Hill front of the site, the walking distance from this department to the western wards would be doubled. Bessemer Road provides convenient and private access to the main entrance, and the Nurses' Home, contained in the upper storeys, in this block is isolated from the traffic of Denmark Hill and its consequent disturbing influence.

The eastern portion of the site is occupied by the out-patients' and casualty departments, with whose working the noise of the traffic offers least interference, whilst at the same time its proximity to the main road provides

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ready access for the large daily flow of patients without bringing them into contact with the rest of the building. Thus the entrances for patients of all descriptions are grouped round one courtyard, which greatly facilitates the working of the Administration. The keynote of the planning of the building has been "centralisation and radiation." The various staff entrances are all contained in the Administration Block, and all departments, self-contained when necessary, radiate round what may be termed the eye of the building—the main staircase at the junction of the Administration Block with the main corridor.

The remaining or north-western portion of the site is occupied by the pathological block, the medical school, the operating-theatre blocks, and the isolation block. The pathological block, which contains the mortuary department, is directly connected with the main corridor, and the medical school at either end. These form an L-shaped plan, the medical school balancing in elevation the out-patients' department, and by its very position screening those portions of the site which should be essentially private. These portions are the mortuary exit and the operation-theatre blocks, which are two in number, each containing two theatres. They are connected with the main corridor west of the pathological block; whilst beyond them stretches the northern wing of the special ward block, terminating the main corridor and providing, in its basement, access to the isolation block in the extreme north-west corner of the site.

The original intention of placing the central heating and lighting station at the western extremity of the site was found impracticable owing to the level of the ground. So its position was decided upon in the centre of the southern portion of the site, which is, of course, most economical for the runs of piping.

The site on its road boundaries is enclosed by a simple but effective wrought-iron railing, and a roadway runs round the site inside the boundary. The border between this and the railing has been planted with various trees and shrubs, nearly all of a flowering variety, and as many as possible of the existing trees have been retained, though unfortunately some of the most attractive had perforce to go.

Architectural Character.

In dealing with a hospital building, one of the greatest factors acting upon the design is the restraining influence of the requirements. The building must be structurally as sound and perfect as possible, but charitable money is not to be expended on undue architectural embellishment. At the same time there is danger of erring in the opposite direction and producing a building utterly bald and devoid of interest. The general motif of the design in this case is inspired by the restrained school of the mature English Renaissance, but of necessity parts of the building, especially those which contain the more technical portions of the hospital, have a character entirely their own, and by the very truthfulness of the interpretation of the purpose give the impression of a substantial, well-proportioned, and sincere building, not disguised in the cloak of any architectural style. The Administration Block, the more domestic part of the building, rises in a compact and dignified mass. A Roman Doric portico in Portland stone marks the main entrance, and colonnades of similar character connect this block with the out-patients' block and the medical school, which flank it on either side. The ground storey is faced with cherry-red bricks, the upper floors being treated in picked London stocks with red dressings. This brickwork is framed in by Portland stone quoins, and a certain massing of stonework in the centre and along the storey under the large crowning cornice gives the effect of a dignified and broad treatment, further enhanced by the long sweep of the mansard roof, executed in Westmoreland slates.

The flanking buildings, with the stonework massed in appropriate positions, both in the centre and under the lead-covered turrets, are not without character and interest. The treatment of the wards themselves, with the bricks of various and pleasing colours, and the windows recessed, breaking the wall surface into a series of verticals, displays a building at once utilitarian and well-proportioned.

Internally a hospital does not offer much scope for architectural treatment, as that term is generally understood. But the hard, clean surface and finish required by the amenities of working and cleansing does not produce an altogether mechanical impression when sympathetically treated. In those places where a certain amount of treatment of a more architectural character is permitted, the requirements of hospital finishing still hold good, though in a much less marked degree. But this restraining influence has had quite a beneficent effect upon the design, making proportions tell more than enrichment. Such rooms as the Chapel, Board Room, Nurses' Dining Hall, Secretary's Office, and the Library in the Medical School have a character quite their own, and they convey an impression of solidity and good quality, and of general restraint and restfulness.

Main Hospital Corridor.

The main hospital corridor, the great artery of the organisation, serves to connect the Administration Block—the heart—with all parts of the building, and at the same time provides all inter-departmental communication. Its central position minimises the amount of ground to be covered, and although its length is almost 900 feet the various parts of the building are so disposed that it is rarely necessary for anyone in the course of duty to have to traverse the whole of this length. It may be interesting to note in this connection that the actual experiences of those engaged in the administration of the hospital have shown that the minimum amount of time is expended in reaching the various parts of the building. The ease of working is the supreme test of the planning of a building of this nature, and in the case of K.C.H. the principle of centralisation and radiation which has governed the planning may be said to have been amply justified. The central corridor with its various staircases, especially the principal staircase in the Administration Block, is a vital part of the planning of the building, and due consideration has been paid in the matter of avoiding all unnecessary congestion of traffic in it. Therefore all large departments are entirely self-contained, and by this means hundreds of people using these blocks never find their way into the main corridor. The empty appearance of this corridor has been remarked by those who are used in other hospitals to seeing the main corridors crowded with people, and such a state cannot but cause confusion and delays. It can thus be seen how vitally important is the planning of the main artery of a large hospital, both from the view of ease of working and avoidance of congestion.

The corridor has a uniform width of 10 feet. Between the various buildings "blow throughs" are introduced between the floors of the corridor, and in every way encouragement is offered to the efficient circulation of air over the site. The floors are of asphalt, with Durato border and cove skirting, and the corridor is amply lit and ventilated by improved "Austral" windows, radiators being installed to ensure adequate warming.

The Administration Block.

The Administration Block is built in four portions, the front one being connected with the main hospital corridor by the other three. The departments housed in this block are the secretarial and the resident medical officers on the ground floor, the nurses' home, the kitchen, and the servants' home.

Wards.

The ward pavilions are all placed on the south side of the main corridor, the exception being the northern half of the special ward block. This block is placed with its central axis on the axis of the main corridor at the western end. The ward pavilions have their axis approximately north and south, and get the maximum amount of sunlight, whilst avoiding the discomfort of the midsummer meridian. The full scheme provides two central three-storey ward blocks on either side of the chapel and central station, flanked by three two-storey pavilions east and west, which together with the special ward block above referred to comprise a total of nine pavilions. At present the three eastern blocks are not built, as they and an additional storey on the special block are contemplated for future extension. The spaces between the wards are sufficient to ensure ample lighting, and in the larger one—*i.e.*, that between the three-storey and the adjoining two-storey block—has been placed a tennis court.

The roofs of the wards are flat, covered with asphalt. The sanitary towers are roofed with Italian tiles, as are also the tank-houses on each of the three-storey ward blocks. The elevations are treated in stock brickwork, with red dressings, and plinths of Crowborough stocks; artificial stone is used for the copings, plinth mould, &c.

The general view of the wards from Ruskin Park is not without effect, and recently the military patients in their blue hospital uniforms have added a touch of colour and

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interest. The patients themselves appreciate to the full the benefit of the uninterrupted view obtained from the sun balconies, and in warm weather many sleep out on these at night. The balconies are segmental in plan, and supported by the flanking sanitary towers, which screen them from the inclement winds. They are well sheltered, the top ones being covered by a glass roof. Adequate protection against accidents is provided by a large mesh wire netting, whilst access to the fire escape stairs is obtained through the cut-off lobbies of the sanitary towers.

Owing to the conformity of the site the ground floor wards are on the level with the first floor of the Administration Block. The space thus formed under the administrative portion of the ward blocks is utilised for various store and other rooms, while under the wards themselves it provides a blow through and space for pipe ducts, &c. Access to the central station is obtained by a sloping corridor under the two central ward blocks.

The main hospital corridor connects all the ward blocks on each floor, the principal staircase with bed lift serving all these floors. There are also subsidiary staircases and coal and diet lifts, directly connected with the stores and kitchen. A staircase, with bed lift, connects each floor of the corridor on the north side, and is used in conjunction with the operation theatres.

The plans of all the ward units, with the exception of those in the special block, are essentially the same. A wide-arched opening leads directly from the main corridor into the ward corridor, 8 feet in width. Three pairs of swing doors are placed in this corridor. The first two pairs are on either side of the cut-off lobby. The only room accessible before reaching this is the ward sisters' sitting room, which is thus in close proximity to the ward and at the same time separated therefrom. Four rooms open into the cut-off lobby; they are the patients' dayroom, nurses' lavatory, a sinkroom, and the wardmaids' closet. Beyond this lobby are, on the left, the patients' clothes store, the duty room with a small larder, and the clinical room, which also communicates directly with the ward. On the right are a linen room and two single-bed wards. The third pair of swing doors in the corridor lead directly into the ward. These doors are glazed with an ingenious combination of obscured and clear plate glass. The advantage of this is that supervision of the ward from the corridor and *vice versa* is possible without opening these doors.

The wards themselves are 108 feet 1½ inch long by 26 feet 3 inches wide and 13 feet high. They contain twenty-four beds, spaced about 8 feet 6 inches centre to centre. Each bed has a window on either side. The windows are of the improved Austral pattern, and are flush with the walls.

The floors of the wards are of ferro-concrete, the space between the beams being occupied by hollow terra-cotta blocks. These fulfil the double purpose of preventing the conduction of sound, and allow the ward ceilings to be plastered flush. The floors of the wards are of stout linoleum laid on a Durato sub-floor, with Durato border and covered skirting. All internal angles are coved to a radius of 2½ inches.

The warming is by radiant heat supplemented by the low-pressure steam radiators of the hospital pattern, with regulating F.A.I.S. The pipes to these are carried up outside the wards, concealed within the splayed window jambs, which are hollow, with removable concrete blocks with lifting rings, in the required positions. Two dual stoves, with descending flues running in the thickness of the floors, and fed by fresh air, are placed in each ward.

The walls and ceilings are finished with flat enamel paint, that on the former being of a restful green tint. The doors are all flush hardwood, with double glazed flush bull's-eye lights where necessary. The small bays on each side of the ward are quite a novel feature. They are of extreme utility, containing as they do basins for the use of the staff and shelves for sterilisers, lotion bowls, &c.

At the end of the ward are large glass doors leading on to the sun balconies, and on either side are the entrances to the sanitary towers, through low, well-ventilated, cut-off lobbies. One of the sanitary towers contains two w.c.'s and a sink room. The closet doors and partitions are 9 inches clear of the terrazzo floor. The closets installed are of a corbel pattern, with waste-preventing cistern immediately over the seat.

The other sanitary tower contains bath and lavatory accommodation. The floor again is of terrazzo, with channels into which the baths and basins discharge. A small wash-up room with sink is also provided. The walls of these sanitary annexes are of glazed brick. The warming is by means of radiators.

Operating Theatre Blocks.

The Operating Theatre Blocks, two in number, are placed on the north side of the main corridor, equally convenient in access from the wards and the Administration. Between the blocks is a staircase and bed lift, intended solely for use in connection with this department. The Theatre Blocks themselves are separated from the main corridor, the larger one being reached by two bridges and the smaller by a single bridge. They each contain two operating floors and a basement floor. The larger or eastern one contains two general theatres and the smaller one a gynæcological theatre on the first floor and a general theatre on the ground floor (ward floor levels).

Out-Patient Department.

The out-patient department, conveniently situated close to the trams and main traffic route, is to a great extent isolated from the rest of the building. It is designed to cope with a large number of patients, and it was of vital importance that these should not interfere with the working of the rest of the hospital.

The nucleus of the plan is the large waiting hall (93 feet by 42 feet). On either side of this, separated from it by top-lit corridors, range the various departments with their consulting rooms. There are also consulting rooms at one end of the hall, accessible from the corridors, and beyond these is a third corridor, linking up the other two, and joining them to the dispensary. Thus the patients pass from the waiting hall to the consulting rooms, progressing thence to the almoner and dispensary, and by a short exit corridor leave the building without having retraced their steps. By this means a steady stream of patients is maintained in one direction only, and confusion and congestion is avoided.

On the north side are the surgical consulting rooms and the ophthalmic department, each with an operating theatre contained in the end turrets. The finishing of these theatres is not so elaborately simple as that of the principal theatres, being used only for minor operations. The ophthalmoscope room can be darkened at will, and the walls and partitions of the examination cubicles are finished in black cement in such a manner that they can be used as blackboards for making diagrammatic notes of the case under observation. The cubicles are planned so that the lamp in the opposite cubicle does not incommode the patient.

On the south side of the hall are the children's, medical, and throat and ear departments.

The Central Station.

In the competitive scheme this was placed, as previously noted, in the north-west corner of the site, providing ready access for coals and stores and well removed from the wards. So many difficulties in the way of levels and drainage were here presented that to overcome them a central position was provided. This was fixed between the two three storey ward blocks immediately south of the chapel. This position has the advantage of centralising the supply and reducing the losses in distribution. Great care had to be exercised to avoid the least vibration or sound penetrating to the adjacent wards and buildings. The successful result attained in this respect is a tribute to the consulting engineers and the general construction. The whole of the accommodation, comprising boiler-house, destructors, engine-house, refrigerating plant, ice store, battery room, house and steam coals, automatic telephone exchange, condense and pump pit, stores, &c., is contained within this irregular space practically below the ground. The basements of the ward annexes are utilised as mess room and lavatory accommodation for the engineers' staff. The engine-room and boiler-house are large halls, 70 feet long, 30 feet wide, and 22 feet high, principally lighted from the top. These two large rooms are, however, high enough above the surrounding rooms to enable a certain amount of clerestory lighting and ventilation to be obtained. The condense pit, the floor of which is 30 feet below the ward level, is served by a tunnel constructed of arched brickwork at a corresponding level below Ward Block No. 5 and linked up with the main ducts beneath the other buildings. On a site such as this—the treacherous nature of the subsoil in this vicinity is proverbial—these works have presented considerable interest during construction. It was hoped that the flat roof space over would serve as a pleasant garden for patients' use, but this has not matured.

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The construction of the main building is of ferro-concrete piers, with panels of 9-inch brickwork between; those to the coal stores being reinforced. The retaining walls are of brickwork.

General Construction and Finishings.

Economy in cost of building combined with efficiency and the economical maintenance of the structure when completed, together with immunity from fire, is the true criterion of success in a building of this character. The walls of the fabric generally are of dark, well-burnt London stocks, relieved by red dressings, Portland stone being used sparingly for quoins, cornices, &c. In the out-patients' department (the first portion built) steel stancheons and joists embedded in concrete for the floors and roofs were used. The whole of the floors, flats, and stancheons in the subsequent work has, however, been carried out in ferro-concrete on the Hennibique system. The greater portion of the buildings is covered with asphalte flats, and it has been found after much experiment that a successful non-conducting blanket can be formed by laying immediately upon the concrete a layer of broken brick of small size, well punned to a thickness of about 5 inches, then screeding and asphalting thereon. In order to avoid beams in the wards hollow floors and flat roofs have been formed of terra-cotta arched tubes embedded in the concrete. Where curved roofs are used the trusses are of steel, an attempt being made to render them as fireproof as possible. The covering is of green Westmoreland slates with lead hips and ridges.

Internal partitions of hollow terra-cotta are used for plastered walls, Shepwood glazed partitions being used in the sanitary annexes, where the walls are of glazed brick. The main waiting hall of the out-patients' department is faced inside with Hathern terra-cotta to the springing line of the barrel-vaulted ceiling. The walls throughout are, with few exceptions, lined with granite plaster finished with enamel paint. In the medical school "Plastolith" dadoes have been used in the laboratories and to the staircase. The staircases generally are finished with granolithic treads and risers, with the exception of the principal staircase, which is finished together with the dado in grey terrazzo. The walls of the board room and nurses' dining room are panelled to dado height in oak and teak respectively, but in no part of the hospital is there an apartment which can be said to be so luxuriously furnished as to warrant detailed description.

Floors generally are of a plastic nature, asphalte being used in all the principal corridors and entrances and to the out-patients' main waiting hall. Durato floors of a mottled character have been laid extensively throughout the buildings and to the margins of the wards, the filling of these latter being of linoleum. Teak wood block floors have been used in the more residential parts.

An interesting feature of the operating theatre blocks is the use of steel door frames, which have been specially detailed and made in this country. The internal doors are flush hardwood to all the "Hospital" parts, deal enamelled doors being used in the nurses' home and other domestic portions of the building.

Novel Features and Equipment.

The hospital does not present any special novelties in construction which call for description, rather has an attempt been made to avoid experiments in a building where hard wear and efficient maintenance at little cost are the first essentials. Walls, foundations, and floors which do not settle and crack, roofs which are sound, plaster and paint free from the usual defects, joinery which shall not shrink; these are the things that matter, and affect the future condition and smooth working of such an institution. Without these attributes no scheme, however perfect in conception, can be successful. The result at King's College Hospital well justifies the time and care which has been expended on these items. There are, however, a few novel features in plan and equipment which may be found interesting to those studying hospital work.

Drainage and Sanitary Fittings.

The fittings have throughout been specially designed for their purpose and inaugurate an entirely new era in sanitation, as the parts generally concealed from sight and liable to insanitary accretions have here been eliminated, every portion being visible and easily accessible. The following features which have been introduced merit special description. The overflows to the sinks and basins consist of an open vertical channel formed in the pottery outside. The waste outlet has no metal work, a rubber plug fitting directly into the pottery, thus dispensing with the brass grid and union joint and their attendant collection of dirt. Both the overflow and the waste discharge directly into the hopper head of a porcelain enamelled waste not connected to the pottery in any way, but hinged to one of the brackets supporting the fitting so arranged that it can be tilted or swung to one side for inspection or cleaning.

The hot and cold valves to all fittings are of the simplest possible construction and are covered with porcelain enamel, all the fittings being easily cleaned by a damp cloth, thereby effecting an enormous economy in labour. The fittings are also constructed to build into the walls flush either with plaster or other material with a cove around same.

Ventilation.

Where possible the ventilation provided has been by natural means. In the Out-patients' Department, where large crowds congregate, mechanical fans have been utilised to supplement the natural method; this has also been done in the Operation Theatre Blocks, Pathological Block, Medical School Lecture Theatre, and in other portions of the hospital where natural ventilation could not be relied upon. In the Administration Block all the bedrooms have been warmed and ventilated by admitting air from the corridors, to which fresh heated air is supplied past the radiators and thence through fan-lights over the doors. Extract flues are also provided, the grating to same being near the floor beneath the beds. The flues all connect to the through ventilated trunk in the roof. The insertion of fans could be made at moderate cost.

In the Out-patients' Department it was decided that a certain number of fans should be inserted, and these have been arranged according to the requirements of each position, either of the positive or simple propeller type.

In the operation theatres, in addition to the "panel" system of hot water heating, auxiliary batteries of radiators are placed in heater chambers beneath the theatres. The fresh air passes through the battery after cleansing to openings near the floor of the theatre. The foul air is drawn up into spaces provided above the ceilings and thence ejected by propeller fans. By regulation of the fans and the inlets the quantity of air for ventilation can be widely varied.

A similar system of extraction is provided to the Post-Mortem Department, the usual system of fresh air passing the steam radiators, however, being adopted here. In the lecture theatre of the Medical School air is admitted through screens and passed through a battery of heaters in the roof to openings in the ceiling, the used air being then drawn out through openings under the gallery seats, thence discharged by a positive propeller fan into the atmosphere.

The design, arrangement, and superintendence during construction of the engineering plant and equipment were entrusted to Professor D. S. Capper, M.Inst.C.E., of the firm of Messrs. Kirkland & Capper, consulting engineers, who communicated the particulars which appear in the complete paper.

Drainage, Water Supply and Fire Main.

The general drainage system comprises a series of eleven main drains, running from south to north, and connecting in Bessemer Road with the public sewer, which in turn discharges into a larger sewer in Denmark Hill. Eventually there will be another main drain running from west to east to serve Ward Blocks Nos. 1, 2 and 3 that have not yet been built, and this drain will have its outfall in Denmark Hill.

A hospital, and, indeed, every large building, should possess several independent outfalls for the drains, so that in the event of any drain becoming choked, or having to be cut to provide for extensions, as small a section of the hospital as possible may be affected, and a minimum amount of interruption caused to the work of the institution. Of scarcely less importance is it that the drainage system should be periodically tested with but little inconvenience to the staff, and reliable tests cannot be carried out in this way where a single drain serves the whole building, or even a large section of it.

Unfortunately, the Bessemer Road sewer, which was constructed not long before the preparations for the contract scheme for the hospital were begun, was laid without reference to the characteristics of the hospital buildings, one principal feature affecting the drainage scheme being the long main corridor crossing the drains at right angles

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and forming a sort of retaining wall with the ground level on the south side some 13 feet above the courtyards and basement of the Administration Block on the north side.

The effect of this sudden drop is to do away with the gentle slope of the original site towards the road, and for a distance of 250 feet from the road, to substitute a stretch of courtyard and basement which is practically level. Had the sewer been laid deeper, as it no doubt would have been had the design of the hospital been known at the time, several of the drains could have been given a far better fall than has been possible, and they could have been reduced in size.

The whole of the underground drains consist of heavy cast-iron pipes, caulked with molten lead and laid on a bed of concrete, and they have been given the best gradients which were found practicable. The pipes vary in size from 3 inches to 9 inches, and their gradients from 1 in 30 to 1 in 115.

As far as possible all drains have been kept out of the pipe ducts, in order to avoid any possible risk to health from an inspection cover being carelessly left off. A few rainwater drains, however, which are trapped off from the sewage drains have been run in the ducts, subways, and coal-cellars, in which positions they are carried on iron cantilever brackets built into the wall or slung from the ceiling, or else supported on brick piers.

If drains are to be self-cleansing, not only should they be given good falls, but they must be well flushed. In order to secure this the upper ends of many of the main drains have been arranged to receive the waste water from the bathrooms in the sanitary annexes of the Ward Blocks, and the baths have been fitted with large outlets so that they may empty quickly.

Those drains which could not be flushed by means of baths have, where it seemed desirable, been provided with flush tanks, which slowly fill with clean water from the main and then automatically give a rapid discharge. Such tanks, for instance, have been fitted in the sculleries in order to break up and get rid of the grease.

In order to reduce the amount of plumbing work to a minimum where practicable, all baths, sinks, and lavatory basins have been arranged to discharge into surface channels in the floor.

In some cases it has been found feasible to give the whole floor a slight fall to the channel, and the convenience of this when using a hose and squeegee for cleaning is obvious.

Water Supply.

The Hospital authorities decided against having their own well and in favour of obtaining their supply from the mains of the Metropolitan Water Board.

The Board have a 16-inch high-pressure main in Denmark Hill with a pumping station at one end and a reservoir at the other, and this main was cut opposite the Hospital buildings, and a sluice valve inserted upon it. A connection was then taken off the main from each side of the valve and brought into the Hospital buildings.

In addition, a third branch has been run from the Board's low-pressure main in De Crespigny Park, which would come into operation supposing that anything so unlikely as two bursts at the same time occurred on the Denmark Hill main. Virtually, therefore, the Hospital has three independent sources of supply.

The main is of cast-iron, and varies in size from 10 inches to 4 inches. All branches over 3 inches in diameter and all branches buried in the ground are cast-iron, but the remainder, with few exceptions, are wrought-iron. The cast-iron pipes are jointed with molten lead, no yarn being used in the joints.

The amount of storage of cold water to be provided was fixed by the Committee at 20,000 gallons, and this volume is contained in a pair of cisterns constructed of riveted steel boiler plates, and situated in the turrets on the roofs of the two centre Ward Blocks.

Fire Main.

The fire main and its branches are supplied from the Water Board's high-pressure main already referred to, and the same threefold precaution against failure in the domestic supply has been adopted in regard to the fire service. The main runs through the pipe subway and basement, and the branches rise from it to the hydrants on the different floors. The hydrants are of Messrs. Merryweather's "Metropole" pattern, the handwheels being of cast-iron, in order to reduce the quantity of bright gun-metal which needs polishing to a minimum. Below each hydrant is a 1½-inch cock for filling fire buckets. The fire main and its branches were tested under a hydraulic pressure of 200 lb. per square inch. For the drainage work, as well as for the water mains and services and the fire mains throughout the Hospital, with the exception of the Out-patient (and Casualty) Department, Messrs. Matthew Hall & Co. were responsible as sub-contractors, under the general contractors, Messrs. Foster & Dicksee, Messrs. Doulton being the sub-contractors for the corresponding work in the Out-patient Department.

DISCUSSION.

The Rev. Dr. Headlam, in proposing a vote of thanks, said he had been connected with the new King's College Hospital as a member of the Building Committee from the beginning. It gave him much pleasure to express his thanks not only to Mr. Pite for the extraordinarily able manner in which he carried out the design, but also to others connected with the scheme. Many were their obligations to Mr. Rowland Plumbe, who was appointed by the President of the R.I.B.A. as assessor for the competition. Mr. Plumbe threw himself into the work with the very greatest ardour, and gave to it all the experience gained from the London Hospital. As far as could be judged, the committee had good reason for believing that the new hospital was not only very carefully designed, but also that it works admirably. He (the speaker) had talked with heads of departments and others closely connected with it, and they without exception declared themselves more than pleased with the way in which the design has worked out in practice. Not long ago an American expert in hospital construction, taken round by the secretary, said at the end of his visit that he had found 50 per cent. more foresight in this hospital than in any other he had seen. The committee's deliberations were assisted by many technical, medical, and lay opinions. Each department was consulted about every detail. How important this co-operation was had again been borne in upon him only the other day, when, on going over a very important public building erected in London by the Office of Works, he was informed that no single department had been consulted about the planning or the arrangements, with the result that they were both full of defects. Therefore he would like to emphasise the extreme value of each department being consulted. At King's College Hospital the medical staff appointed a watching committee, which had two representatives on the Building Committee. Every department submitted its requests; these were first gone through by the Medical Committee, and then by the Building Committee. Consequently the architect received the full-considered opinion of the medical staff. The staff of King's College Hospital had taken care to demand nothing extravagant, and had helped the Building Committee in every way they could. Again and again one admired the patience, courtesy, and skill with which Mr. Pite had devoted himself to meeting the special demands of each department, and he seemed ever prepared to sacrifice points which he cared for a good deal. This hearty co-operation of the medical staff, the business department, the matron, and the architect had had the effect of producing what is a very remarkable building. What one admired in Mr. Pite's design was that the artistic features have arisen out of the needs of the work and its structural conditions—no ornament has been put on for its own sake. By making the hospital serve its purpose Mr. Pite had succeeded in producing a very beautiful building in perfect harmony with itself and well proportioned.

Hon. Sir C. A. Parsons mentioned that it was now ten years ago since they decided to move King's College Hospital to South London. A number of sites were proposed, some on the flat ground between Denmark Hill and the river, and others on rising ground. He and Dr. Buzzard were appointed to visit these. The site selected faced the north, but the back of it faced the south and a beautiful park; therefore the architect could arrange his plan accordingly. The area was twelve acres. They agreed that it was the most desirable. But could the hospital afford it? Fortunately the Hon. W. F. Smith offered the money necessary for its purchase in memory of his father. A large number of architects were then asked to present plans. The committee looked through them and came to the conclusion that in selecting Mr. Pite's design they were doing well. Every question was subsequently thrashed out in a most harmonious way. In his opinion the design

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had been well worked out, and the use of reinforced concrete had been admirably introduced. The next question was heating and lighting, and whether the current should be taken from the electric-light station "next door." They decided to be absolutely independent. The question of a well was also considered, and it was concluded to be better to take the water from the London companies. As far as possible everything was done to keep down the working expenses of the hospital. The whole building reflected the greatest possible credit on Mr. Pite.

Dr. Silk expressed the appreciation and gratitude of the medical staff for the very excellent building Mr. Pite had put up. He believed it was owing to the staff having been so very fully consulted in the matter that no friction had arisen. The watching committee took a great deal of trouble visiting hospitals both in the provinces and all over London for tips. He felt sure King's College Hospital would be a Classic example of hospital construction, and every architect for some time to come will have to consider very carefully its design and arrangements.

Mr. H. W. Wills, F.R.I.B.A., said that although he could give testimony to the admirable way in which King's College Hospital had been planned, he would rather draw attention to another aspect. Architects usually went down to a hospital to admire its plan and the way in which it fulfils certain practical wants. But they did not look upon it as a building which carries on the historic tradition of English architecture. But about King's College Hospital there was something of the feeling which Wren's Chelsea Hospital inspired one with. The latter building is likewise exceedingly plain, with a central feature in stone giving emphasis to the simple brickwork. Mr. Pite's design would show future designers that we of to-day have learnt something from Sir Christopher Wren. King's College Hospital will be in the future considered not only as an excellent example of hospital design, but also of English architecture, and will give more pleasure than many elaborate contemporary buildings will do.

Mr. S. Perkins Pick, F.R.I.B.A., thought that as time goes on it will be found that the balconies are of insufficient area in this hospital. There has been a great revolution in this matter during the last ten years, and it seems as if balconies will be more and more used.

The vote of thanks was then passed by acclamation.

Mr. W. A. Pite, in reply, said that one of the joys in carrying out the work had been the reconciling of the various views of the staff. The watching committee held about fifty-six meetings, which usually started about 8.30 P.M. and continued till the small hours of the morning. He would like to acknowledge the extreme sympathy of Lord Hambleden, a most able man, in this work. When beginning he really wondered whether he would see the hospital built. It was practically impossible for one human being to see a great work like this through. He owed a deep debt to a most able staff, added to which were a most able foreman and clerk of works and the firm of Messrs. Foster & Dicksee.

THE WOODEN CHURCHES OF THE SILESIAN-POLISH FRONTIER.

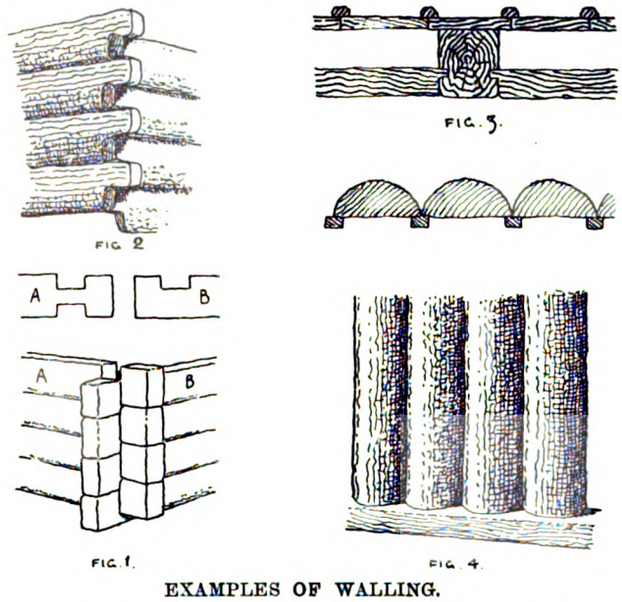
By J. Tavenor Perry.

The Russian armies at present operating between Warsaw and Cracow may be expected presently, and perhaps more quickly than German reports would lead one to believe possible, to enter upon the low-lying lands of Silesia, one of the most valuable parts of Prussia both for its mineral products and its industries; and that much-fought-over province will again resound, if not to the clash of arms, to the roar of artillery. What our enemy will do to the buildings of his own country in a retreat remains to be seen, but if he acts as he has done in his Polish campaign he will leave but little standing of the wooden churches we are about to describe. In modern times Silesia has specially suffered from the horrors of being a battleground. In the Thirty Years' War three armies were in possession of it, quarrelling among themselves and only combining to defend it against Wallenstein; from 1740 to 1768 Frederick of Prussia was fighting up and down it, besieging its cities, and wresting it by force and fraud from Maria Teresa; and it was overrun by the French under Napoleon in 1807.

As Silesia is a country but little known to us in Western Europe, except to the casual tourist who seeks the scenery of the Reisengeberge, and it receives but scant notice in the pages of Murray and Baedeker, some short account of its history and characteristics is necessary before embarking on an architectural description of its curious wooden churches. English authorities dealing with the province are comparatively few, and for its architecture German authorities are alone available, the three principal from which most of the information contained in this paper is drawn being the following: (1) "Verzeichnis der Kunstdenkmäler der Provinz Schlesien," (2) "Die Holzkirchen und Holztürme der Preussischen Ostprovinzen," and (3) "Bilderwerk schlesischer Kunstdenkmäler," herausgegeben von H. Lutsch.

The original inhabitants of the country were the Quadi, who are always associated with the Marcomanni, and were both conquered by Marcus Aurelius and are shown together on his column. As Quadi means Wicked, or wicked people, and is perhaps the origin of our word Quod, the association is particularly appropriate to the present circumstances. In early mediæval times it formed part of the kingdom of Poland, and was—and still is to a great extent—occupied by Slavic inhabitants. Their language, still spoken in parts, is an ancient dialect formed of a mixture of Bohemian and Polish. Carlyle's experience of it when he was touring in Silesia for "local colouring" for his "Frederick the Great" he sums up in this sentence: "On the eastern rim there is still a Polack remnant, its territories very sandy, its condition very bad; remnant which surely ought to cease its Polack jargon, and learn some dialect of intelligible Teutsh, as the first condition of improvement, instead of gasconade, gilt anarchy, rags, dirt, and *Nie Pozwalam*." In some division of the Polish Monarchy Silesia fell to the share of one brother whose sons became its first Piast Dukes, and on the gradual extinction of their descendants it passed to the house of Austria; since when its adventures are modern history which is still in the making.

The portion of the province with which we are immediately concerned, as containing the bulk of these wooden churches, is that "eastern rim" lying between the Oder and the frontier, where it abuts on the monotonous endless sandflats of Poland. Here, says Carlyle, "in the scraggy lonesome woods, grimy individuals, with kindled mounds of pine branches and smoke carefully kept down by sods, are sweating out a substance which they inform you is to be



EXAMPLES OF WALLING.

tar." These woods are a continuation, but with larger interspaces of cultivated land, of the vast forests of Poland, the deep shade and extent of which afford in summer time a grateful shelter, but in winter, when every bough is heavily laden with congealed snow, shroud the ground in almost impenetrable gloom. In the cleared part of the forests, and around the scattered villages which lie exposed to the north and east winds blowing over the vast plains, the drifting snow or the fierce rains entail special precautions in the construction of the buildings, and lead to some of the peculiarities which appear in the architecture of the district.

Although stone is procurable without much difficulty throughout the province, and particularly on its western side, the great abundance of the timber, combined with a lack of highly skilled labour, has made wood the usual

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material for construction in all the outlying parts, and it is rare to find, outside the larger towns, anything but timber building east of the Oder. The timber used is that cut in the immediate neighbourhood, or sometimes on the site itself, chiefly consisting of yellow fir—Pinus Sylvestris —though sometimes larch—Pinus Larix—which is also found in abundance in these forests. Oak, however, of native growth is not unfrequently employed in the numerous fittings, such as pulpits, gallery fronts, pews and fonts-covers, with which many of the churches are lavishly adorned. This customary use of wood has produced so stereotyped a mode of construction that it is difficult to tell, from a mere inspection of the work, the date of the fabric; and it bears, necessarily, in many respects, a considerable likeness to similar buildings to be found in timber-producing countries such as Scandinavia, Pomerania, and even early England. Nevertheless there are many peculiarities, due to local circumstances, making the churches of these districts of great interest to the architect; and at the present juncture, when the country may be again devastated by war, their attraction is very much increased.

Some notes on the general construction of these buildings must precede any architectural description of the buildings themselves. There are three common modes of building the walls shown in our illustrations figs. 1 to 4, which seem to have gone on contemporaneously and

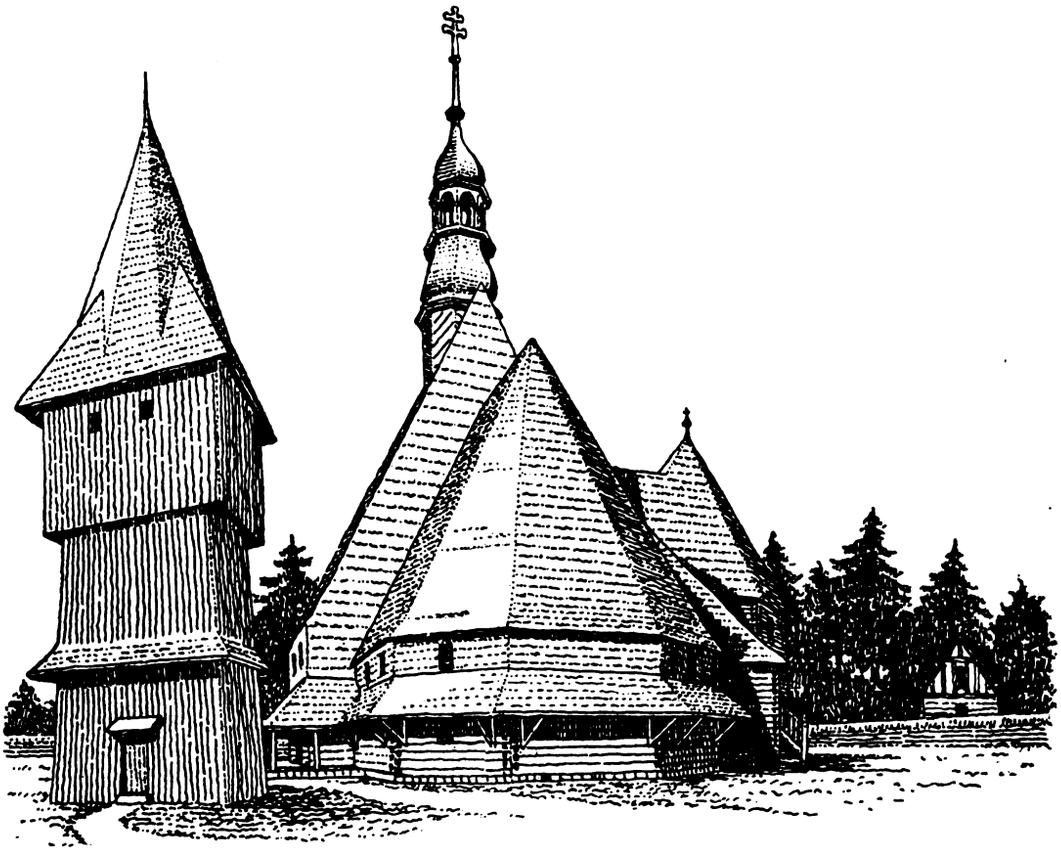


FIG. 5.—PONISCHOWITZ.

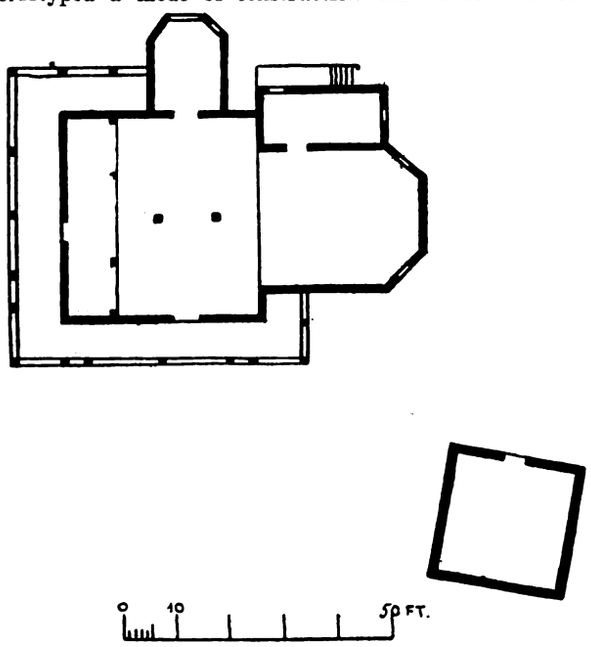


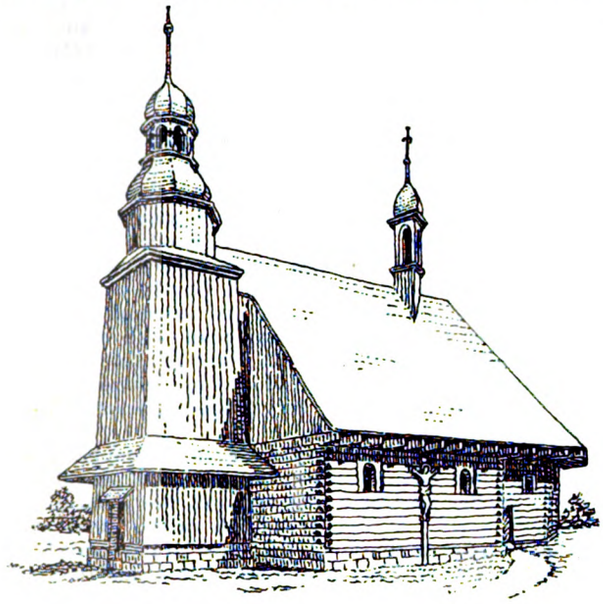
FIG. 5.—PONISCHOWITZ.—PLAN.

give no indication of date—indeed, they may all appear in the same church. But the most usual walling consists of slabs of timber, with the rounded side exposed to the weather and the ends halved across each other at the angles, as shown on the detail (fig. 2), and the illustration of the church at Ponischowitz (fig. 5). The work looks very rough, and it is generally covered over by shingles on the outside as a further protection, as shown in the upper part of the walls of the same building, the projecting ends at the angles being first sawn off. The walls are sometimes formed of those slabs set vertically, of which we have a good example in this country in the little Saxon church of Greensted, Essex, built in 1008 (fig. 4). Frequently in place of the slabs the walls are built of roughly squared timbers carefully notched over each other at the angles, as shown in fig. 1, and occurring in the important church of Pawlau (fig. 6). The interior sides of these slabs are generally wrought, and form the visible facing of the walls inside the building; but the joints at Greensted have been covered by a fillet, apparently an addition at the restoration, to stop the cracks which inevitably arise from the shrinking of the timber.

Another mode of construction, shown in fig. 3, consists merely of posts, to which internally, where showing, wrought boarding was fixed, while the outside was covered with vertical boarding, having the external joints covered with chamfered fillets. This sort of walling was used mainly in the construction of the belfries and the filling up of gable ends, and a good example of it is shown in the Tower of Lubowitz (fig. 7). The roofs, and generally the upper parts of all walls, are covered with fir shingles cut long enough to lap from one slab to another, and used at all angles and rakes as the exigencies of each case demands. In most cases the lower parts of the walls are more efficiently protected against the drifting snow and penetrating rains, as well as the fierce summer's sun, by wide-spreading lean-to roofs, generally erected for no other pur-

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pose, but often utilised by partial or complete enclosure as porches or passages. These frequently produce a most pleasing architectural effect, and save the buildings from a bare and gaunt appearance which they would otherwise have. The eaves are always canted forward at a lesser angle than the pitch of the roof generally, so as to increase their



PAWLAU
BY RATIBOR

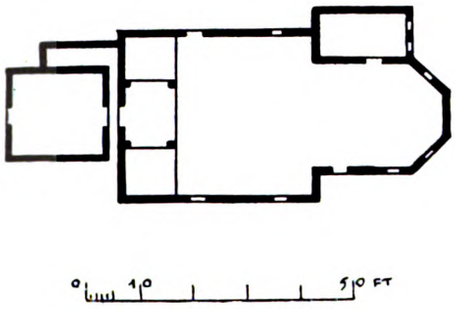


Fig. 6.—PAWLAU.—PLAN.

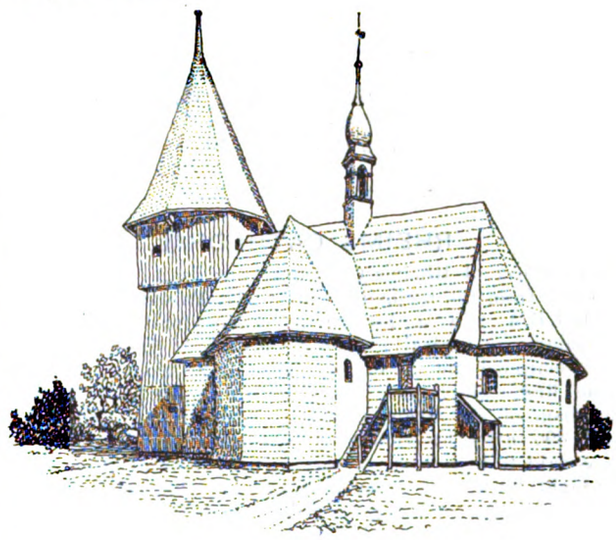
projection beyond the face of the walls and break the rush of the water; and the base of all walls covered with shingle is treated in the same manner. As a rule these timber walls are laid on a plinth of coursed or random-jointed stone, standing but a few inches above the general surface of the ground, and frequently half-hidden beneath the lowest course of the shingling.

On plan these churches present many variations, but in one important particular they differ from those of stone construction in that they are always aisleless, and their external differences appear mainly in the form and arrangement of their east ends, the presence or absence of transepts, sacristies, or chapels, and the form and position of the bell towers which usually accompany them. The commonest form of a complete church is a rectangular nave, with a chancel at the east end, having a three-sided termination, the cants being at varying angles, and, as there is no vaulted roof to consider, often irregularly set out. Where transepts occur, as at Lubowitz (fig. 7), they occupy nearly the full length of the north and south walls of the nave, and add but little to the picturesqueness of the whole structure.

The towers containing the bells are almost invariably placed at the west end of the nave, with generally a small intervening space between their walls and those of the church—a space included, however, as a rule, under an extension of the nave roof or its widely projecting eaves. Where this position is departed from for various reasons connected with peculiarities of the site, the tower stands quite detached, frequently set at a different angle to the main building and often placed towards the east end of the chancel. The example given of the church at Ponischowitz (fig. 5) shows all these peculiarities.

These towers are generally built considerably battering with strong angle-posts and intermediate posts of smaller scantling and a great deal of cross-bracing. Above this was placed a wide-spreading head, in which the bells were generally hung, and the whole was crowned by a shingled spire with greatly projecting eaves. One reason for this peculiar arrangement of the upper part is due in the main to climatic considerations, since the driving rains and snow almost precluded the use of ordinary louvres or any large opening for the sound of the bells to escape, which was therefore provided under the well-protected eaves, or the open projection of the upper storey efficiently guarded by the depth of the external boarding. These towers were almost always covered with vertical boarding, filleted at the joints, and further protected by a lean-to roof in some portion of their height if very considerable.

Another very important external feature which adds much to the picturesque appearance of these wooden churches is the flèche or dachreiter which is almost invariably found towards the east end of all the nave roofs, and which generally contains or contained a single bell. Sometimes they are of considerable size, and from their exposed position have to withstand great wind pressure. As a rule they have to depend entirely on the framing of the roof beneath for their support, but occasionally, as in the case of Ponischowitz (fig. 5), the roof tie-beams have extra support from posts below.



LUBOWITZ
BY RATIBOR

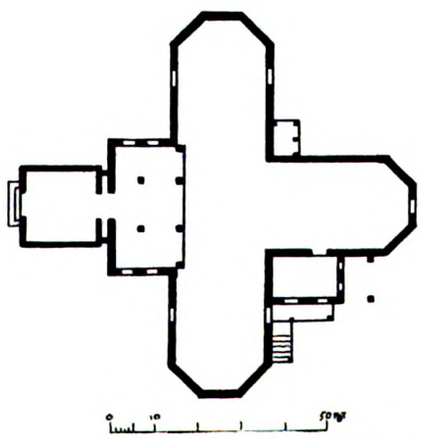


Fig. 7.—LUBOWITZ.—PLAN.

Another feature which adds somewhat to the picturesqueness of the churches is the external staircase, sometimes even two or three, provided to give access to the galleries or the Lord of the Manor's special pew, which is often placed above the ground-floor level. These are frequently little more than step-ladders, often very steep and sometimes left without roofs or other protection against the elements.

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Before leaving the exteriors to describe the remarkable interiors of these buildings, mention must be made of the enclosures of the surrounding churchyards, which had to afford efficient protection against the wolves in winter, and which—if the old stories, such as Meinbold's "Sidonia the Sorceress," be true in their account of the ghoulish proclivities of the beast—was eminently necessary. They were

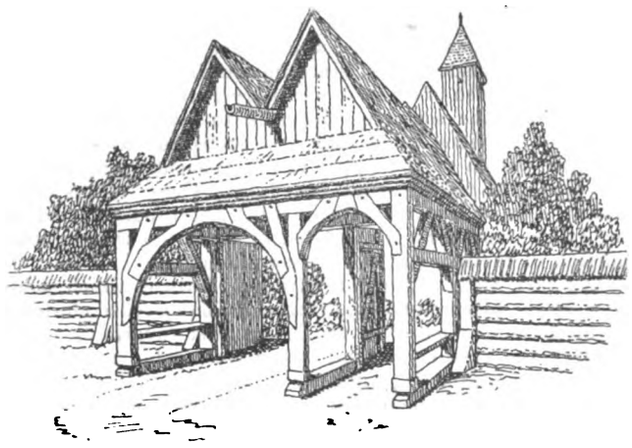


FIG. 8.—BURGSDORF.—LYCH-GATE.

generally formed of timber slabs either set close, as at Burgsdorf, or open slightly, but not sufficiently to allow of beasts squeezing through, and they had the entrances to the enclosure fitted with close-boarded gates. Sometimes these entrances were through lych-gates, of which we give a fine example from Burgsdorf (fig. 8), probably dating from the sixteenth century.

(To be concluded.)

RHEIMS CATHEDRAL.

THE subject of Rheims Cathedral was dealt with very completely from the pictorial side by Mr. Banister F. Fletcher, F.R.I.B.A., in a lecture at Carpenters' Hall, entitled "Rheims—a typical French Cathedral." There have been, he reminded the audience, three cathedrals on this site. The first, which was probably of timber, witnessed the baptism of the Frankish King Clovis by St. Remigius in A.D. 496, after his victory at Soissons. This royal baptism was said to have been performed with a phial of sacred oil, brought by a dove from Heaven, and thus was originated the coronation of Kings of France with the sacred *ampulla* in Rheims Cathedral by Archbishops of Rheims. Clovis (A.D. 481-511) even when a pagan respected the shrines of Christianity, and preserved the cathedral from sacrilegious attacks—in striking contrast to that modern ruler who sanctions the destruction of the monuments of religion and art.

The second church built in stone, on a larger scale, under Louis le Debonnaire in 811, was twice damaged by fires in the tenth century, and in A.D. 1210 it was completely burnt down.

No city was then complete without its cathedral, which was the one great public building to serve religion, art and learning, and was on occasion the centre of civic life.

There was already in Rheims the great monastic church of St. Remi with its new Gothic choir, but the people wanted a cathedral of their own to rival those at Chartres, Laon, Sens, and Paris. So without delay they began the reconstruction of their cathedral which already held such a proud position in national tradition.

The original architect of the present (or third) cathedral was Jean d'Orbais, and he was succeeded by Le Loup, Gauchier, and Bernard de Soissons. The first stone was laid on May 6, 1212, by Archbishop Alberic de Humbert, who gave all the money he could obtain, while the Chapter presented its treasury and the clergy appealed for funds in the name of God. Kings of France and feudal peers also contributed, and pilgrimages were made through neighbouring towns and villages to collect offerings from the people. Thus did king, archbishop, architect, master-masons and people set to work to create the greatest triumph of Gothic art in France—a shrine fully worthy of the devotion of citizens and the coronation of kings.

The clergy began to celebrate services at Christmas 1241, although workmen were constantly employed on the building till 1460.

This triumphal church, majestic in appearance and royal in association, has a vast nave to accommodate the concourse of people who witnessed the royal ceremonials, while sanctuary, ambulatory and chevet were specially designed for the high officials and numerous clergy who took part in the coronation of Kings of France from Philip Augustus (A.D. 1188) to Charles X. (in 1823).

Rheims Cathedral dominates the city, of which it is the principal monument, as it has done for 700 years—a silent though impressive witness of the religious devotion which produced it. It is distinguished by unity of style and detail, and has been unspoilt by subsequent additions which have taken away from the dignity of many cathedrals, such as Amiens. It is also a fine example of the constructive principles of the mediæval church.

Rheims ranks third in size of the cathedrals of France. It is only exceeded by Amiens and Chartres, and has an internal length of 455 feet and an internal breadth of 99 feet. It has a symmetrical plan with two western towers (walls being 7 feet thick), nave 44 feet wide in the clear, and aisles with deep projecting buttresses. The transepts are of great width east to west in order to provide ample space for coronations.

The west facade, 130 feet wide, was completed about 1300, and has been described as the most splendid conception of the thirteenth century and the admiration of the whole world. Its beauty consists in the excellent proportion of part to part, in the three grand portals with their statued niches, the great rose window and the Gallery of Kings. It owes much to the relative proportion which allows the twin western towers, 265 feet high, to disengage themselves from the facade, their effect being entirely dependent on structural design and not on sculptured ornament.

[The lecturer then proceeded to explain with some minuteness his sixty-three slides showing both exterior and interior.]

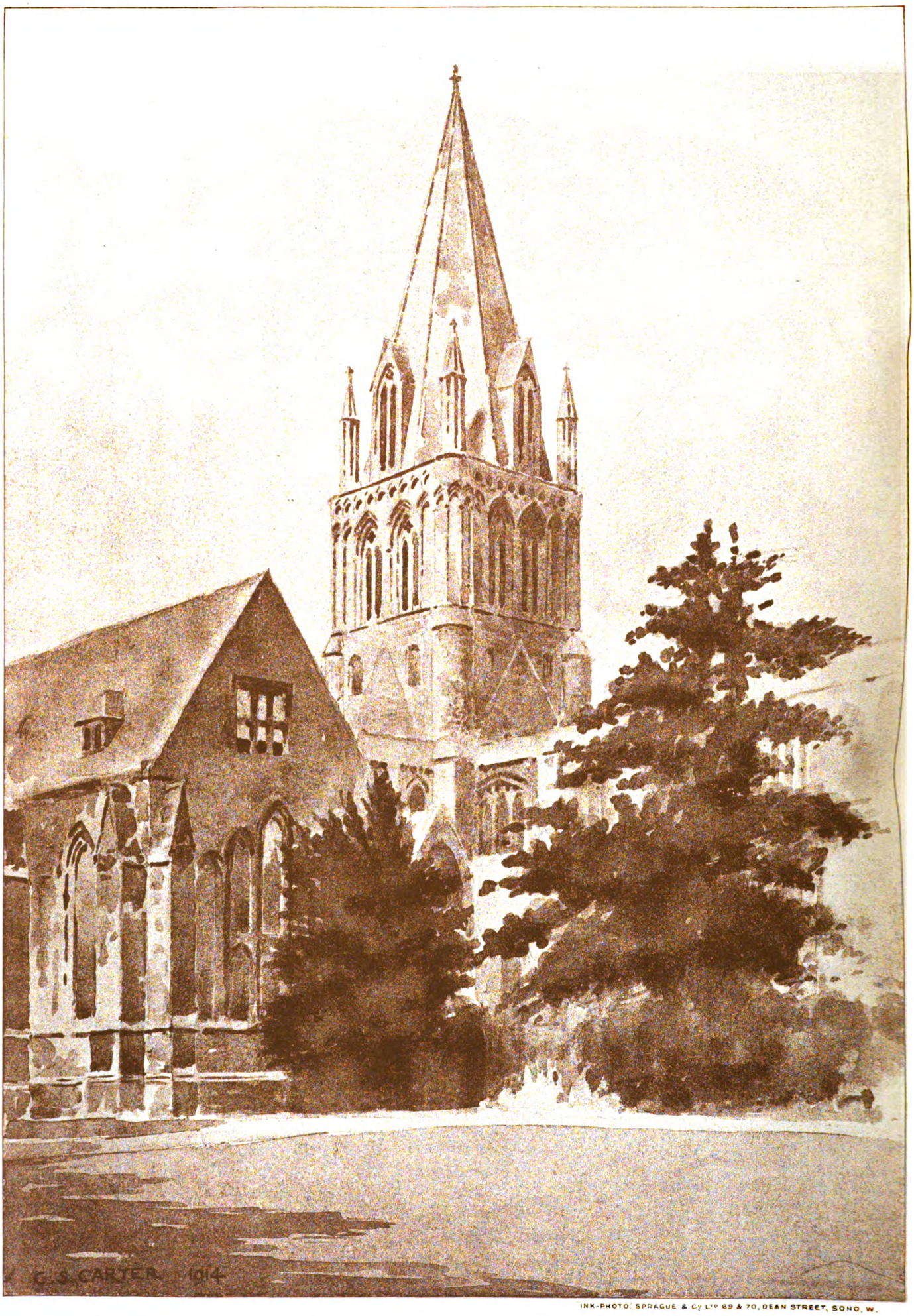
In conclusion, Mr. Banister Fletcher said: "There is already talk of restoration, but restoration in the true sense is impossible. We may repair the ruthless ravages to the structure, we may reproduce the shattered carving, we may reconstruct the fallen roof and restore the broken masonry, we may replace the mutilated statues of kings; but we cannot recreate the marvellous colour scheme which was the chief glory of this ill-fated cathedral, for we cannot even copy the mellow, glowing colours of that wonderful translucent stained-glass, which was the great artistic production of the thirteenth century, and which transformed solid stone walls into gleaming glass pictures and earned for Gothic architecture the nickname of the 'painted glass style.' We can only dimly realise the loss to the world at large through the wanton destruction of this shrine of religion and treasure-house of art by a so-called Christian nation, which, while giving lip-service to religion and culture, has not hesitated to strive to reach its goal by a disregard of treaties, by destruction of churches, the burning of libraries, the murder of women and children; by piracy and pillage and by methods of barbarism which, even in war, have long since been discarded by civilised nations."

THE BEAUX-ARTS COMMITTEE.

ON March 24 an exhibition of students' work was held at the atelier in Wells Mews, and it was a pleasure to observe a better output than on the occasion of our previous visit a few months ago. A good grasp of the scheming of a general hospital was apparent in most of the studies submitted; and we, in common with the jury, regarded Mr Percival M. Ware, A.R.I.B.A., as the student who most fully realised the essentials of hospital grouping. Centrality and thrice centrality should be the aim, not for the sake of obtaining a pretty plan (or Planæsthesia, as it has been aptly termed), but for the purpose of economy of service throughout all its varied branches. We parted company from the jury (as represented by Mr. Davis) in regarding it as a desirable feature that the ward blocks should advertise themselves towards the main road; true, that there is nothing to be ashamed of in being a hospital ward—far otherwise, but there are many things of which we are not ashamed and yet we mask them, because they lack the quality which makes them attractive. The misfortune is that exigencies of grouping seem to require that the chapel (the one opportunity in a hospital allowing æsthetic vent)

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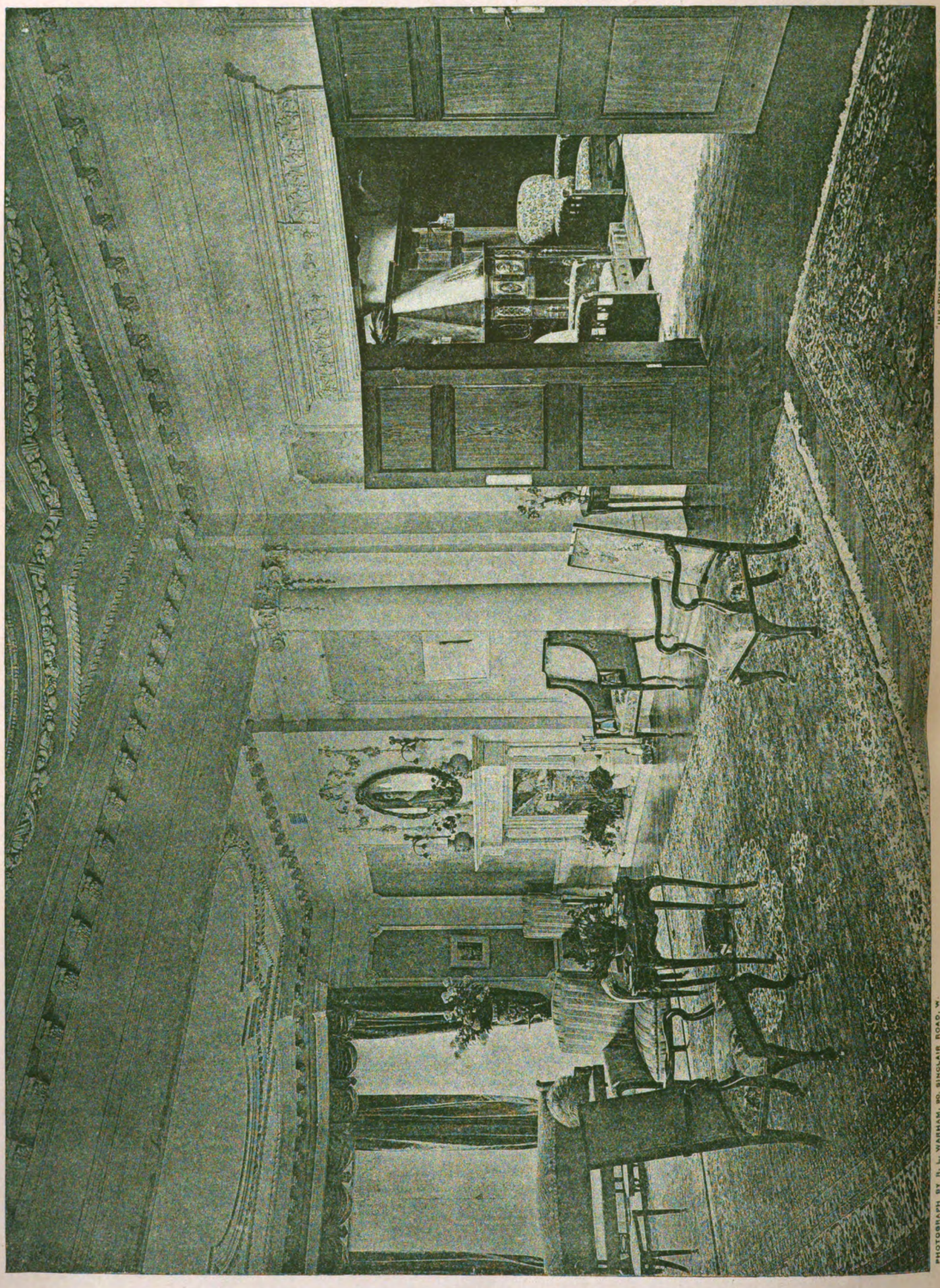
OXFORD CATHEDRAL.

From a drawing by Mr. CHAS. S. CARTER,

"The Architect" Travelling Student, 1914

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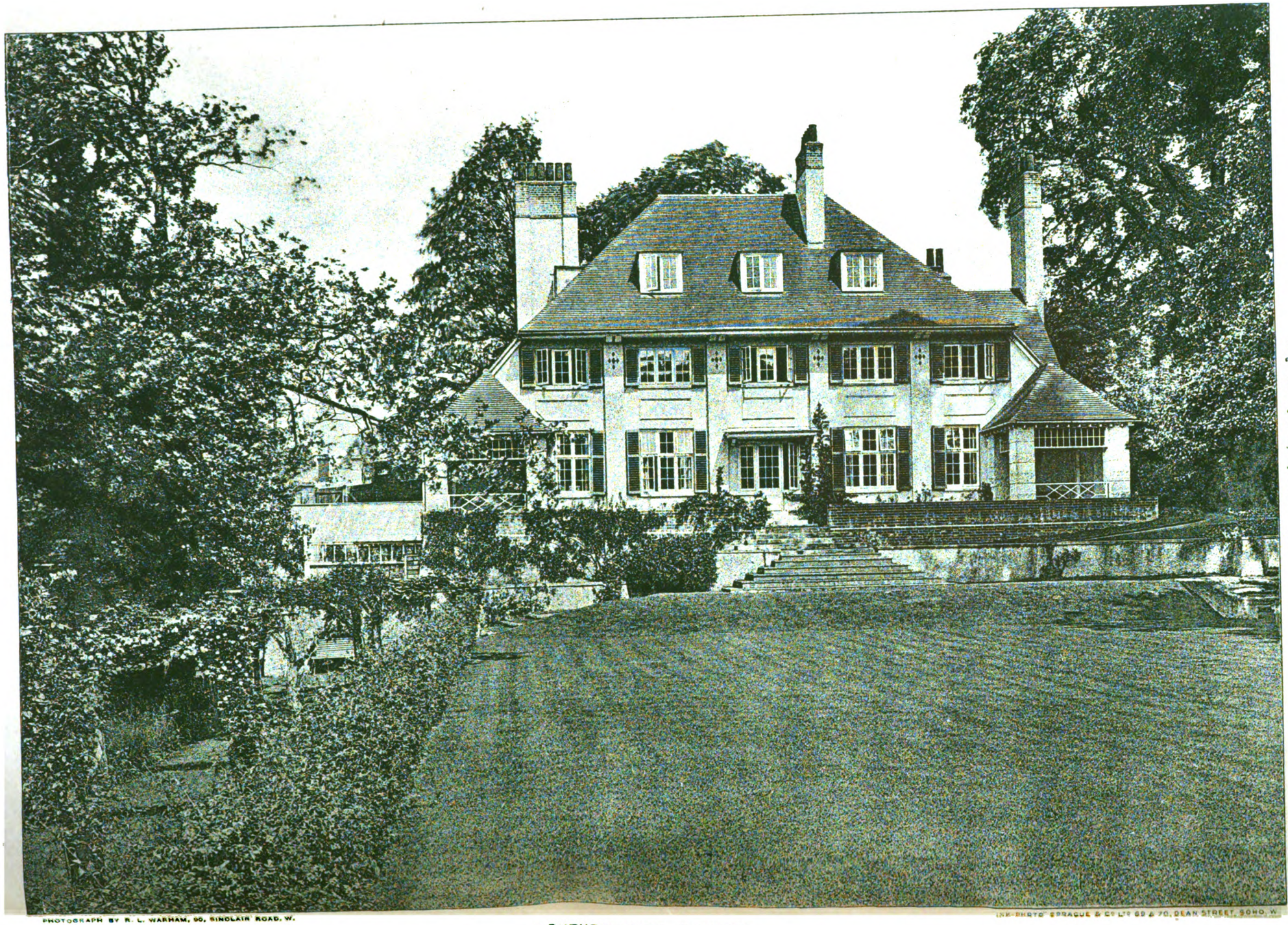
KEMNAL MANOR, CHISLEHURST: DRAWING ROOM.
MR. VICTOR WILKINS, Architect.

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"SUTHERLANDS," HARROW.

MR. ANTHONY R. BARKER, Architect.

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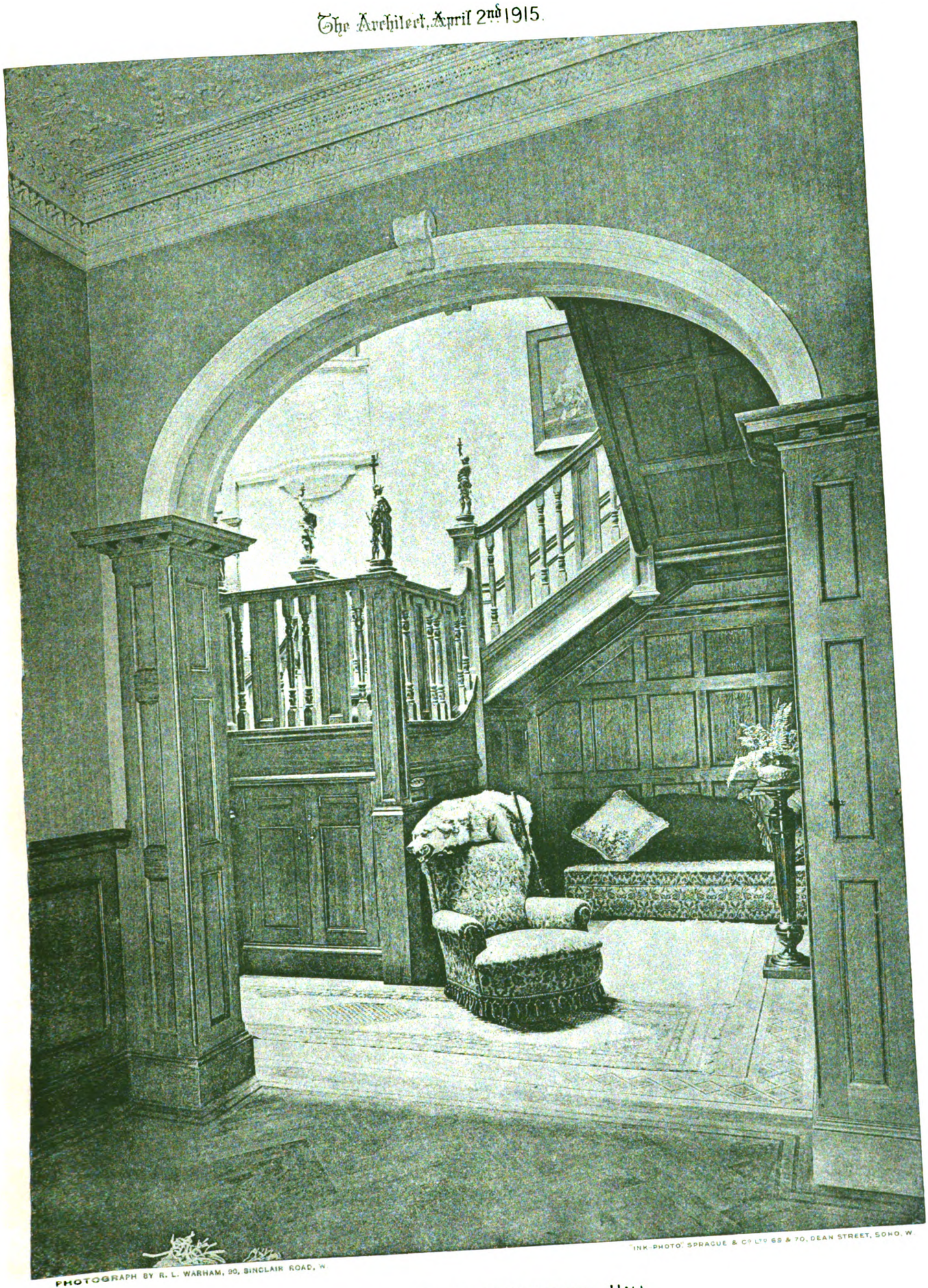
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KEMNAL MANOR, CHISLEHURST:

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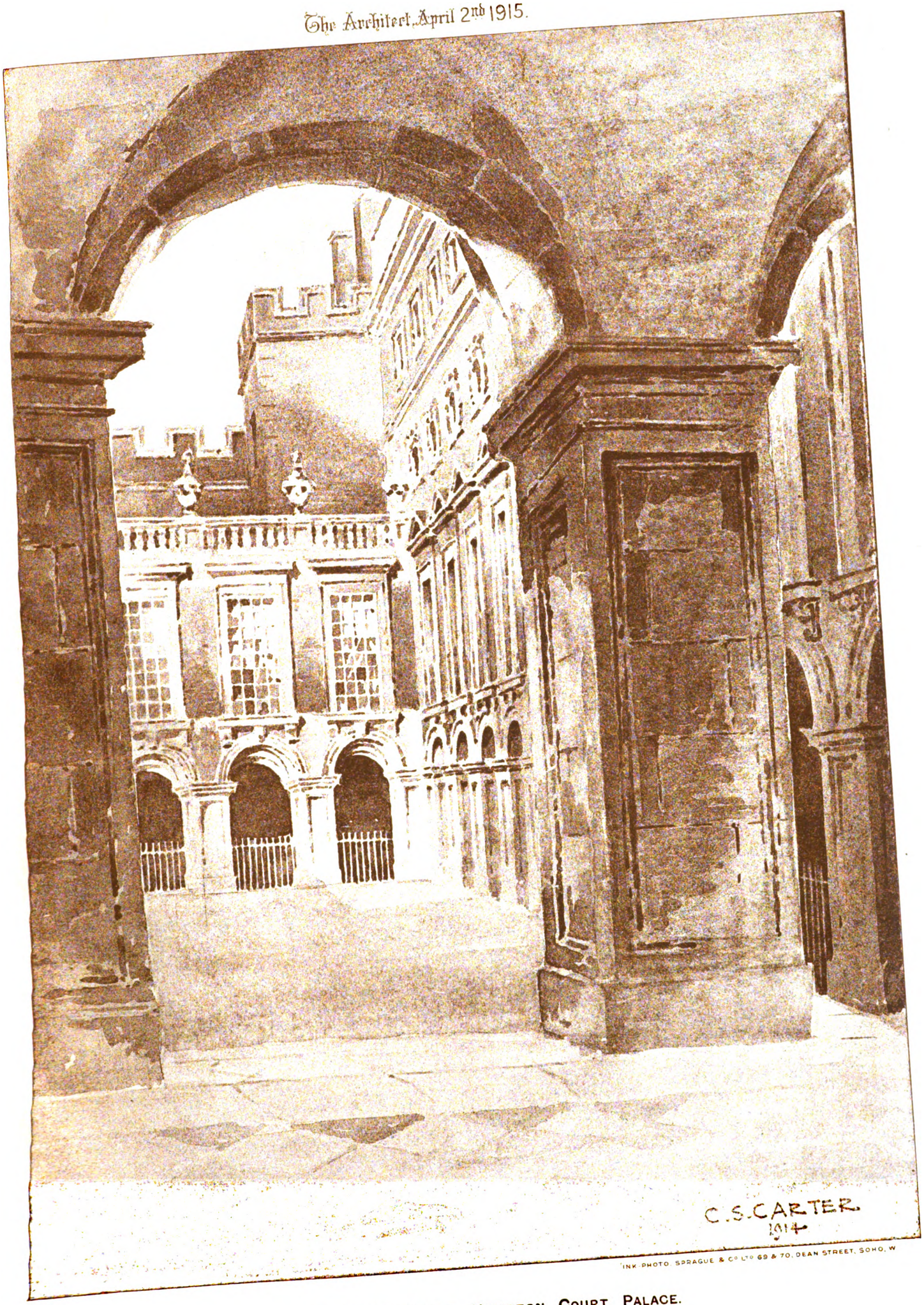
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KEMNAL MANOR, CHISLEHURST: HALL

Mr. VICTOR WILKINS, Architect.

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FOUNTAIN COURT, HAMPTON COURT PALACE.

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should be in the rear instead of being in advance. The main adverse criticism which we have to offer against Mr. Ware's scheme is the excessive spacing of the ward blocks, and in this respect we viewed with approval the designs submitted by Mr. E. R. Jarrett and Mr. L. H. Bucknell, which were conceived on curiously similar lines. Herein the economy of service would be promoted by having a cross-communicating corridor behind the kitchen block, such as Mr. F. E. Gooder's design provided. Mr. J. H. Edgecumbe's and Mr. O. E. Macfie's schemes showed departures from the general conception as exhibited; the former disposed his pavilions with the longitudinal axes set east and west, whilst the latter showed a regrettable leaning towards planæsthesia by setting the blocks at right angles with the strongly divergent canted boundaries of the site, with the obvious result that if the lighting were good for one-half of the pavilions it would be poor for the remainder. Mr. Macfie erred also in insufficiently spacing the blocks. With that one exception, however, the submitted designs were certainly praiseworthy. The conception of a water-tower was far less satisfactory, Mr. Bucknell's being rightly regarded by the jury as not alone ranking first, but as being commendably good—an effective, expressive, and well-proportioned building. Mr. H. J. Tebbutt's design was also pleasing, saving for the roof, which looked like a mandarin's hat; and Mr. Edgecumbe had an effective design, but not of the character of a water-tower. The St. George stained-glass window proved a failure; leadings and saddle-bars are important factors in such work, but taking the designs as submitted, we should place Mr. Gooder first.

BELGIUM TOWN PLANNING COMMITTEE.

Viscount Bryce, O.M., has consented to become President of the newly-formed Belgium Town Planning Committee, which has been constituted by the amalgamation of the various committees previously considering the question of the replanning of Belgium. The Committee, which is under the patronage of the Belgian Government, has Mr. Raymond Unwin as chairman and Mr. Ewart G. Culpin as secretary.

Following upon the recent highly successful conference at the Guildhall, London, the next step will be the opening of a Belgian exhibition at University College, Gower Street, W.C. Lord Bryce has promised to open the exhibition (for which Mr. Frank Brangwyn has prepared a striking poster) on April 7 at 4 p.m. Invitations to the ceremony may be obtained from Mr. Ewart G. Culpin, secretary, School of Architecture, University College. The exhibition will remain open until the end of the month.

At the same time "study groups" of architects, lawyers, and others will be instituted for the consideration of the actual facts of town planning, both on the legal and technical sides; lectures and conferences will be held for municipal councillors and the general body of the public in order to educate them in these matters. University College has kindly provided studio and office accommodation.

Money is urgently needed to carry on the work, and may be addressed to the Secretary, at the School of Architecture, University College.

PROBLEMS IN MODERN ILLUMINATION.*

By Valentine H. Mackinney.

From the earliest days men have learned the value of sunlight. Before the days of artificial light men feared the night time and the darkness. Even in the present time medical men realise the health-giving and curative powers of the sun, and condemn buildings where there is not proper access of daylight.

If one examines the buildings of to-day one finds that their shape is settled very largely by this necessity to provide ample daylight. In the cotton factories of the North extraordinary pains are taken to secure maximum window space, and the schools of to-day are designed specially with a view to the proper natural lighting of the desks.

It is somewhat singular, seeing that such care is devoted to the natural lighting of buildings, that the provision of artificial light does not receive more care. Not infrequently when buildings are erected the artificial lighting is left to the very last, and the amount expended on it quite out of proportion to its importance. Yet in the present age artificial light plays an important part. The great developments in illuminants during the last century have revolutionised the traffic conditions in our streets, enabling swift-moving vehicles to pass where once men moved with a sense of danger. In the olden days the disorderliness of the streets were such that people preferred to keep behind doors at night; illumination has been one of the most powerful means of promoting the safety of our thoroughfares.

Much of the labour of to-day is done by artificial light; most people find in the evenings their main opportunity for social enjoyments and recreation.

Good Illumination and the Care of Health.

It is therefore a matter of importance that the artificial light, which we now use so freely, should be properly arranged. Bad lighting affects the health in many ways. Not only does the general health of people habitually working amid gloomy conditions suffer, but the mere fact of their trying to work under such difficulties imposes a strain.

Many years ago the conditions of eyesight in the schools throughout Europe and the United States had already given grave concern to the medical authorities. Classes were found where as many as 20 or even 30 per cent. of the children suffered from defective vision, and much of this was believed to be due to the strain imposed on the eyes by working in unsatisfactory illumination. During recent years educational authorities have been making special efforts to better the lighting of schools. Only last year a Joint Committee, promoted by the Illuminating Engineering Society, issued a report on the subject, and experiments are constantly going on with a view to making further improvements.

Good lighting is naturally of special consequence to the young. But the adult worker in the factory also suffers if the light is bad. Anyone who has been through a cotton mill and seen the complicated machines at work will realise the strain caused by tending them under insufficient light. The eyesight of workers in the textile industry is known to be readily affected in this way. But bad lighting, by adding to the strain of labour, causes fatigue and general deterioration in health, even when it does not directly affect the eyes. So well is this realised that the Home Office in this country has appointed a Departmental Committee to study this subject, and exhaustive inquiries into the illumination of many kinds of factories are now being made.

Good Illumination as a Safeguard against Accidents.

There is another way in which bad lighting affects health and causes loss. It is now well established that it is directly responsible for a large number of accidents. Exhaustive investigations, carried out on upwards of 80,000 plants in the United States, have shown that the greatest number of mishaps occur in the winter months, when artificial light is mainly used. It has been shown further that accidents and spoiled work occur mainly in the twilight hours, when daylight has faded and has been replaced by artificial light. Statistics show, too, that certain trades are more affected than others. In practically all industries most accidents appear to take place by artificial light. But in the case of mechanical and engineering workshops and shipyards nearly 75 per cent. of the accidents have been found to occur during the dark hours.

All this shows that there are defects in artificial lighting which lead to mishaps, and which are therefore remediable. Cases are known of men stumbling over unseen projections on the floor when carrying molten metal in foundries; of men missing their footing on scaffolding, or in the docks while working in the twilight; and of men tripping and falling against moving machinery, simply because the artificial lighting did not enable them to see clearly what they were doing.

Then there is also an indirect cause of accidents to be found in the fact that badly-lighted machinery soon gets neglected because it cannot be seen; the dirt paves the way for an ultimate breakdown, possibly with serious consequences.

One can roughly estimate that at least 200,000 accidents occur in England every year, a large proportion of which are due to bad lighting and could easily be avoided by improved illumination. The money lost on account of these accidents might easily reach a value of several millions of pounds.

Good Lighting an Economical Necessity.

Now, accidents are always a source of loss, not only because of the compensation paid to the injured, but because

* A Paper read by Mr. E. Stroud before the Institute of Sanitary Engineers.

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of the disorganisation to which they give rise. In many cases, too, poor lighting gives rise to minor mishaps which, although they do not cause injury to life or limb, lead to financial loss. In a badly-lighted printing works, for example, breakdowns of the machinery are much more frequent, and the source of trouble much more difficult to locate, than in well-illuminated premises. And in a highly organised process like this, where work has often to be carried through at top speed and great pressure, a temporary breakdown may have very inconvenient consequences.

It has been proved that unsatisfactory lighting is often a cause of spoiled work, and that it slows down the speed of operators and limits the output. In a certain factory tests were recently made before and after an improvement in the lighting, and it was found that the output had been increased by 11 per cent. Now, the cost of lighting is almost always a minute fraction of the wages bill—in many industries less than 1 per cent.—so that even a small increase in output would more than repay the relatively small cost of putting the lighting on a satisfactory basis.

It will be observed, too, that the finer the quality of the work and the more skilled the operators, the more serious the results of poor illumination, and the more obvious is the case for good lighting. What is the use of paying for the most up-to-date and expensive machinery, and engaging the most highly skilled workmen, and then grudging the small expense necessary to enable both to do their work? But even in the case of comparatively unskilled labour, such as packing, bottling, or similar routine work, inconvenient lighting makes itself felt. Tests carried out with a stop-watch have shown that all such operations can be slowed up, and less economical results obtained, if the lighting is not up to the mark. So well is this recognised that in the textile works of the North the weavers migrate to those mills that are known to be well lighted, and desert those where the illumination is notoriously bad; they know that they can earn more when the ilumination is satisfactory.

Naturally much of what has been said above applies equally to office lighting. A badly-lighted office is never well kept. Things get out of place, mistakes are made, and much time is wasted. In a bank, where absolute unfailing accuracy is essential, good lighting cannot be dispensed with. A clerk working in insufficient light is apt to make mistakes, and no one can foresee how serious the consequences of such a slip may be.

In many other cases we find the same thing. A badly-lighted restaurant fails to attract custom, a badly-lighted shop is a constant annoyance, both to the staff and the customer. Show window-lighting has become a fine art, and up-to-date merchants fully recognise the value of well-lighted windows as an advertisement. People naturally crowd to the window where the illumination is exceptionally good. Not long ago some experiments on this point were carried out in a well-known store. The number of people passing who looked into a certain indifferently lighted window was noted. It was found that the window attracted the notice of about 12 per cent. of passers-by. Then the services of an expert were called in and the illumination was redesigned in a thoroughly up-to-date decorative manner. A count showed that no less than 72 per cent. of passers-by now looked in.

What Constitutes "Good Lighting."

From what has been said above the value of good lighting should be evident. But it is not such an easy matter to say exactly in what good lighting consists. There are, it is true, certain fundamental requirements that must be met. The lights should be sufficient. In an office or workshop, for example, we must provide enough light on the work to enable the workman to do his task in comfort, or the clerk to read and write with perfect ease. We must also provide sufficient general illumination in the room for all surrounding details to be clearly visible. But only long experience can show exactly how much light is needed for different classes of work; and only the skill of the trained lighting expert can secure that in any installation this correct amount will be provided. The illumination should be just right. Too little would be a hindrance to the worker, and therefore uneconomical; too much would be waste.

Another fundamental rule is that the light should be directed where it is needed. This implies two things—that the lights are arranged in the correct positions, and that the lamps are provided with the correct shades or reflectors, screening the light from the eyes of workers and directing the rays just where they are required. Proper shading, in fact, is one of the first requisites in successful illumination. It is not enough merely to provide a bright light. An unshaded source, throwing the light right into the eyes of the worker, instead of on the work he is doing, is a constant source of annoyance; it may even be worse than no light at all. For instance, glaring lights among scaffolding and at the heads of staircases have led men to stumble and thus actually caused accidents.

There are, of course, many special points to be considered. The light should come from the right direction, the shadows should be just right, neither too soft or too hard, the glassware or metal used with the lamps should be suited to the surroundings. But all these requirements can be met by the trained illuminating engineer.

To understand clearly the importance of the physiological aspects of illuminating engineering, a brief description of the structure and action of the human eye may be of value.

Illumination and the Eye.

The eye is often compared with the ordinary photographic camera, the action of the two being similar in many respects.

The iris, or diaphragm (or what is usually known as the "coloured part of the eye"), corresponds to the shutter of a camera, contracting and expanding to regulate in so far as it is able the amount of light which passes through the opening called the "pupil," which appears as the black spot in the eye. At the back of the iris is a lens, which is controlled by muscles which automatically alter its shape, so as to focus on the retina, behind the eye ball, as accurately as possible, the picture of the object seen. The retina corresponds to the sensitive camera film. The action of the light entering the eye and falling on the retina is supposed to be a photo-chemical one, causing transmissions to the brain, which are interpreted as the sensation of vision.

Should the eye be suddenly exposed to a very bright light, the light spreads over the retina, causing, as it were, halation. The image of the bright light becomes blurred, and other more moderately illuminated objects become, by contrast, difficult to see. The chief distinction between the eye and the camera is the former's adaptability. The eye can accommodate itself to the intensive brightness and glare of the desert, and the gloom of the coal mine. But this adaptation takes time. It is the sudden transition in brightness, whether successive or simultaneous, that causes the trouble.

Light may fall into the eye in such a manner as to cause immediate pain. An unduly bright source in the field of vision involuntarily attracts the eye. In schoolrooms this is particularly noticeable. A child, while studying or attending to the blackboard with an insufficient or imperfect shaded light in the field of vision, is distracted from his work, which must cause mental fatigue. But even among those who try to resist looking at a light source, it is invariably a disturbing factor in directing attention from a certain objective.

We can facilitate the comfortable action of the eye and reduce temporary or permanent harmful effects to a minimum by observing the following rules in designing a lighting installation:—

1. There must be sufficient illumination so that objects are easily seen by means of the light which they reflect; therefore, more light must be thrown on dark objects than on light ones.

2. There must not be too much contrast of illumination. Should desks be brightly lit by means of local points, there should also be sufficient general illumination to see about the room in comfort, when one's attention is taken from the desk.

3. Unscreened bright lights in the field of vision should be avoided.

4. The lights should be steady. The constant attempt of the eye muscles to follow the change in brightness, if a flickering light, may result in temporary eye-strain, and adds to the trouble of carrying out fine work. This is raised as an objection to the use of gas-driven engines, and engines of low periodicity for supply stations, as the pulsations are distinctly noticeable in the resultant illumination.

5. Streaks or striations in the resultant illumination are undesirable owing to the attempt of the eye muscles to adapt themselves to the varying illumination. Highly polished reflectors, which give definite images of the light sources, are, therefore, to be avoided, or used only with lamps provided with diffusing and enclosing globes. This striation effect is very objectionable when you get the light

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"THE ARCHITECT" Students' Sketching and Measuring Club

With the view of encouraging amongst architectural students the sketching and measuring of old work, the Proprietors of "The Architect" have decided to establish a Students' Sketching and Measuring Club in connection with this journal.

A separate subject will be set and a money prize given each month, and in July a Travelling Studentship will be awarded to the student who has submitted the best aggregate of work during the year.

SUBJECT FOR APRIL, 1915.

A water colour of a picturesque building or block of buildings, with special reference to grouping and environment.

Conditions.

1. There is no restriction on the size of the drawing to be sent in by each competitor, but only one subject is to be submitted.

2. The subject drawn need not necessarily be in its original position, but may be in a museum or elsewhere.

3. Each drawing is to be accompanied by a short historical and architectural description.

4. A prize of Two Guineas will be given to the author of the drawing considered best by the Editor, or at his discretion the amount may be divided between the contributors. All drawings will be returned to their authors.

5. The drawing to which the prize is awarded will, if suitable, be published in *The Architect*, but the Editor reserves the right of publication without payment of any other drawing sent in.

6. Drawings are to be delivered at the office of *The Architect*, addressed to the Editor, and marked outside "Sketching and Measuring Club," on or before Friday April 30, 1915.

7. Each drawing is to be accompanied by a coupon (which will be found below) properly filled up.

8. A criticism on the drawings sent in will be published in *The Architect*, and reference will be made to each under the name of the author or a *nom de plume*. (*See coupon.*)

9. Every reasonable care will be taken of drawings sent in, but the Proprietors of *The Architect* will not be responsible for any injury or loss that may occur.

10. The decision of the Editor of *The Architect* shall be final and without appeal in all matters connected with the Students' Sketching and Measuring Club.

11. The winners of the Travelling Studentships, 1910, 1911, 1912, 1913 and 1914 will be *hors concours* for future Competitions of the Club.

SUBJECT FOR MAY, 1915.

A measured drawing or drawings, with details and perspective sketch, of an external doorway of eighteenth century date.

SUBJECT FOR JUNE, 1915.

A pen and ink perspective drawing of a building or group of buildings erected previous to the year 1700 A.D.

The conditions relating to the subjects for May and June will be published during those months.

Conditions of the Travelling Studentship.

1. The Travelling Studentship will be awarded in July 1915 to the author of the best work sent in during the months of July 1914 to June 1915 (inclusive). In the case of students who send in more than one drawing or set of drawings in any one month, the Editor will in making his award select one only from the work of each month to count in the competition for the Studentship.

2. The value of the Studentship will be Ten Pounds, and the holder will be required to make a sketching tour of a fortnight's duration in a district to be approved by the Editor.

3. The sum of Ten Pounds will be paid in two instalments, half before the student starts on his tour, and half when after his return he shall have submitted to the Editor satisfactory work executed during the tour.

4. The proprietors of *The Architect* shall have the sole right of publication of the whole or any part of the work executed by the student during his tour.

5. The decision of the Editor of *The Architect* shall be final and without appeal in all matters connected with the Travelling Studentship.

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sources vibrating as in a machine shop, and when reading or working on paper with a shiny surface.

6. Light sources should be properly placed so that the light is not regularly reflected into the eye. This is particularly applicable to desk lighting and similar employments, and in conjunction with the striation effects mentioned above.

Intrinsic Brilliancy.

The unpleasant effect of bright light sources in the field of vision is now termed "glare." The glare from an illuminant so used is mainly a function of the "intrinsic brilliancy" of the light source, usually expressed in "candle-power emitted per square inch of projected area." The following table is of interest as showing the intrinsic brilliancy of various modern sources:—

Table for Intrinsic Brilliancy for Various Light Sources now in Use.

Light Source.	Candle-power per Sq. In.
Moore tube	0.3-1.75
Frosted electric incandescent lamp	2.5
Candle	3.4
Gas flame	3.8
Oil lamp	3.8
Cooper-Hewitt lamp	17
Welsbach gas mantle	20-50
Acetylene burner	75-100
Enclosed A.C. arc lamp	75-200
Enclosed D.C. arc lamp	100-500
Electric lamps—	
Carbon 3.5 watts per candle ...	375
Carbon 3.1 watts per candle ...	480
Gem 2.5 watts per candle ...	625
Tantalum 2.0 watts per candle	750
Tungsten 1.25 watts per candle	875
Tungsten 1.0 watt per candle	1,000
Tungsten half-watt	2,000
Sun on horizon	2,000
Flaming arc lamp	5,000
Open arc lamp	10,000-50,000
Open arc crater	200,000
Sun, 30° above horizon	500,000
Sun, at Zenith	600,000

The brightness of the average white sky is about 2.5 c.p. per square inch, and many authorities consider that the objects in an artificially lighted room should not be brighter than this.

(*To be concluded.*)

DAMAGES FOR UNCOMPLETED CONTRACT.

In the King's Bench Division on Tuesday, Mr. Justice Sankey concluded the hearing of an action by Messrs. Wheeler Bros. (of Reading), Ltd., to recover from Captain Arnold Wills damages for breach of a contract to build a mansion, which was to be called Thornby Court, near Brixworth, Northamptonshire.

Mr. E. M. Pollock, K.C., M.P., and Mr. Alexander Neilson were counsel for the plaintiffs and Mr. Hollis Walker, K.C., and Mr. Cohen, K.C., for the defendant.

The damages claimed fell under two heads. Plaintiffs stated that they set about the building of the house and incurred expense by work, labour, and materials, in respect of which the defendant, before the action was brought, had paid a sum of about £3,000, and they claimed a balance of £1,276 9*s.* 6*d.* Secondly, they claimed damages for breach of contract, alleging that after they had started to build the house the defendant stopped further proceedings about the end of 1912 or the beginning of 1913, and as a consequence they had suffered damages in respect of the loss of profit which they would otherwise have made if the defendant had allowed them to fulfil their contract.

The defence, after a general denial in regard to the claim for the balance of £1,276 9*s.* 6*d.*, paid into Court the sum of £861 9*s.* 6*d.* for certain specified items, which left on the issue a balance of £415 in dispute between the parties. The defendant then said in respect of the claim for damages that there was never any contract between him and the plaintiffs to build the house, and that if the plaintiffs had such a contract it was entered into without his authority.

It appeared that in November 1911 Captain Wills was living at Thornby Hall, a famous Elizabethan mansion in Northamptonshire, where Cromwell is said to have stayed on the eve of the Battle of Naseby. Captain Wills saw Mr. E. B. Hoare, an architect, practising in Portman Street, W., and also at Reading, and asked him to go and visit the site of the hall. The captain's first intention (said Mr. Hoare) was to rebuild Thornby Hall, and, after some discussion, there was a tentative agreement in consequence of which the architect got into communication with Messrs. Cooper & Sons, a firm of quantity surveyors, with regard to getting out quantities. The quantities were duly returned in a few weeks' time, but in the meantime a difficulty had presented itself. It was thought that a lane close to the hall rather interfered with the privacy of the old house, and Captain Wills was desirous of getting the lane diverted in order that he might secure a more quiet and more private site for the proposed new house. Mr. Hoare had in the meantime been active, and on July 3, in a letter to Captain Wills, he wrote:

"Once more as to the question of builders. I am proposing, as suggested yesterday, to instruct Messrs. Cooper to send a list of quantities to Messrs. Wheeler Bros. (of Reading), Ltd., instead of putting the work out to competition. It is so difficult to obtain really good-quality work by competition, and the more my experience is in this particular the more do I find the difficulty of obtaining really satisfactory results. If, therefore, we employ a first-class firm with an agreed profit of 10 per cent. on their work, and have the figures checked by Messrs. Cooper, we shall obtain what we want."

Defendant was successful in inducing the local authorities to agree to the diversion of the lane, although it had to be done at his own expense, and meanwhile the builders were going into the matter in order to give an estimate. On September 29 Mr. Hoare wrote to Captain Wills intimating that the estimate for the house had come out at £47,000, and that as this was a higher figure than Mr. Cooper quoted he had asked him to go through the prices with Messrs. Wheeler, and Mr. Cooper had given it as his opinion they were fair prices for first-class work. Defendant did not want to spent £47,000, and certain deductions were made, including the substitution of iron for gun-metal casements and the omission of certain panelling, as a result of which the estimate was brought down to about £40.000. However, said Mr. Hoare, Captain Wills subsequently decided he would not rebuild Thornby Hall on the old site, but would build a new house to be called Thornby Court on another site, the plans for the former to be adapted for the latter.

The case turned on an interview between Captain Wills and Mr. Hoare on October 16. Mr. Hoare said on that occasion defendant gave him orders for the house to be built on the new site by the plaintiffs, and, by defendant's permission, he sent a telegram to plaintiffs in these terms: "Please arrange for Cheshire (plaintiff's manager) to come and see me on Friday morning." His (the architect's) firm followed that up by a letter to the plaintiffs intimating that Captain Wills had instructed them to proceed with the work and place it in their hands.

Other evidence was given to show that the contract was entered upon, and the defendant frequently discussed details of the work. Then, after the foundations had been proceeded with, he decided not to go on with the contract.

Captain Wills, in evidence, declared that at the interview in question he did not authorise Mr. Hoare to enter into a contract with plaintiffs for the work. In cross-examination by Mr. Pollock as to what was meant by the foundations on the new site, defendant retorted, "They were foundations of nothing."

Mrs. Wills also gave evidence.

Mr. Justice Sankey, in delivering judgment, observed that he entirely accepted what Mr. Hoare said with regard to the interview on October 16. His Lordship added that it was an extremely difficult task for anybody in the circumstances to estimate what the damages should be, but he should award 500 guineas, and also find for the balance of £415 in respect of the claim for work and materials, making £940 altogether.

His Lordship entered judgment accordingly.

The Hull Corporation Health Committee have under consideration a scheme for building a garden village between the Hessle Road railway crossing and Pickering Park. Over seventy acres are available, and it is proposed, if the land can be purchased, to erect ten houses per acre. An offer has been made of £485 per acre. The committee favour the scheme, but it has not yet been submitted to the Council.

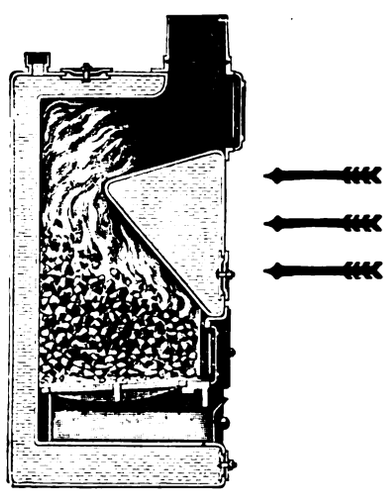
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[The Editor will not be responsible for the opinions expressed by Correspondents.]

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SIR,—We have an inquiry from a client abroad for 40 tons of Zoolite sand. We understand this is a special artificial sand which used to be made in Germany, but it is possible that it is procurable here. If you will be kind enough to give us any information, either yourselves or through your readers, we shall be very much indebted.—

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BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Crewe.—Proposed Council school, Newdigate Street.

CORNWALL.

Mullion.—Post Office, Churchtown.

DEVON.

Devonport.—Technical School: extension (£17,000).

Plymouth.—Proposed tuberculosis hospital.

Torquay.—Tuberculosis dispensary (£700), and additions and alterations to "Larchmont" as a hospital (£980).

ESSEX.

Barking.—Electricity Works: extension (£1,600). Council surveyor.

Mixed secondary school for 200 places (£11,000).

Burnham-on-Crouch.—Works, The Quay: extension, for Messrs. T. Nethercoat & Co. Messrs. R. Terrell & Co., contractors.

Chelmsford.—Council school, rear of South Primrose Hill.

Grays.—Joint Hospital: alterations to the Administrative Block. Mr. G. Brown, contractor (£1,387).

Leytonstone.—County High School for boys (470 places).

Southend-on-Sea.—Cinema theatre, West Street, Prittlewell, for Mr. W. C. Bradley.

GLOUCESTERSHIRE.

Bristol.—Colston's Girls' School: extension.

Castle Green Congregational Church: new Sunday school, Greenbank (£900). Mr. W. H. Taylor, architect. Mr. F. Chown, contractor, Bath Buildings, Montpelier.

HAMPSHIRE.

Aldershot.—Council mixed school for about 450 places.

Bournemouth.—Proposed girls' secondary school.

Redbridge.—Premises, for the Schultze Company.

HERTFORDSHIRE.

Norton.—Church Hall. Mr. Temple Moore, F.R.I.B.A., architect, 44 Bedford Row, London, W.C.

KENT.

Sittingbourne.—Mortuary and public conveniences.

LANCASHIRE.

Dalton-in-Furness.—R.C. School, Walney Island.

Grange-over-Sands.—House, Charney Well Lane. Mr. R. B. Barker, architect, Arnside.

Heywood.—"Engineers' Arms" P.H., Aspinall Street: rebuilding. Mr. T. Townend, architect, District Bank Chambers, Fleece Street, Rochdale.

Radcliffe.—Sixteen Council houses, Stand Lane. Mr. W. L. Rothwell, surveyor. Messrs. Rigby, Ltd., contractors (£2,896).

LINCOLNSHIRE.

Sleaford.—Offices, for R.D.C. (£1,150).

NORFOLK.

Snettisham.—Farmhouse and outbuildings. Mr. L. F. Eagleton, architect, King Street, King's Lynn.

NOTTINGHAMSHIRE.

Worksop.—Hospital: extensions.

SHROPSHIRE.

Wellington.—House, Holyhead Road, for Messrs. Carver Brothers.

Proposed Post Office, Walker Street.

Slaughterhouse, Union Road, for Mr. Jordan.

STAFFORDSHIRE.

Newcastle-under-Lyme.—Children's receiving home, Thistleberry Avenue, for B.G. Messrs. Tompkinson & Bettelley (of Longton), contractors (£2,793).

Stoke-on-Trent.—Maternity Centre (£1,900), for T.C. Colour Works, for Messrs. Keeling & Walker.

Stone.—Pumping Station: additions and alterations (£600). Mr. R. C. Frain, engineer.

SUFFOLK.

Sudbury.—Woodwork Centre. Mr. P. A. Hunt, architect, Shire Hall, Bury St. Edmunds.

SURREY.

Byfleet.—Pumping Station: extension (£800). Chertsey R.D.C. surveyor.

Guildford and Kingston.—Dispensaries.

Milford.—Sanatorium, Sattenham. Mr. T. W. Aldwinckle, F.R.I.B.A., architect, 20 Denman Street, London Bridge.

SUSSEX.

Bognor.—House, Shelley Road, for Mr. H. W. Seymour. Three houses, Bedford Street, for Mr. E. J. Field.

Horsham.—The "White Horse" Inn: rebuilding, for the Rock Brewery Company. Mr. T. Garrett, architect, 34 Ship Street, Brighton.

Littlehampton.—Buildings, railway wharf extension Messrs. J. Linfield & Sons, Ltd., contractors, New Road.

WARWICKSHIRE.

Coventry.—Proposed technical institute.

Premises, Trafalgar Street, for the Reliance Foundry Company, Ltd.

Workshop, Spon Street, for Messrs. Rudge-Whitworth, Ltd.

Exhall.—Proposed public elementary school, Neal's Green.

Foleshill.—Two houses, Holbrook's Lane. Mr. H. Goode, builder, Holmsdale Road, Coventry.

Solihull.—Proposed cinema theatre, High Street, for Mr. J. Eborall.

WILTSHIRE.

Salisbury.—Memorial Hall. Messrs. J. Harding & Son, architects, 58 High Street.

WORCESTERSHIRE.

Dudley.—Eye infirmary and out-patients' department of the Guest Hospital (£4,100).

Evesham.—Sanatorium: enlargement of the Administrative Block (£1,000).

YORKSHIRE.

Bradford.—Proposed smallpox hospital, Odsal.

St. Mary's Church Schools, Laisterdyke: additions and alterations. Mr. T. L. Dixon, architect, 309 Bowling Old Lane (also at Buttershaw).

Bridlington.—Grammar School: extension. Mr. J. Bilson, F.R.I.B.A., architect, 23 Parliament Street.

Carcroft.—Wesleyan Chapel and school. Messrs. C. Sprakes & Sons, contractors, 17 East Laith Gate, Doncaster.

Cudworth.—Working Men's Club and Institute, James Street: extensions. Messrs. G. Moxon & Son, architects, 26 Church Street, Barnsley.

Halifax.—Children's Home, for B.G. Messrs. C. Williams (F.R.I.B.A.) & Sons, architects, Post Office Buildings, Commercial Street.

Healey.—Proposed Council school, for Batley Education Committee.

Heckmondwike.—Two houses, Battye Street: Mr. J. B. Allatt, builder, Jeremy Lane.

Rawmarsh.—Two houses, shop and house, and conversion of existing premises, High Street. Mr. J. Platts, architect, High Street, Rotherham; also

Rotherham.—Branch Stores, Eastwood Vale, for the Masbro' Equitable Pioneers' Society, Ltd.

Technical instruction buildings, Howard Street, for the Education Committee.

Sheffield.—Public elementary R.C. school, Woodseats, for about 150 places.

WALES.

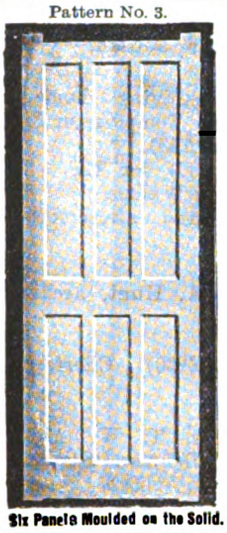
Bettws.—The "Plough and Harrow" Inn: rebuilding. Mr. J. C. Rees, architect, Parade Chambers, Neath; also

Hirwain.—Cinematograph theatre.

Llanelly.—Sixty-one Council houses, Capel. Borough surveyor.

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THE
Architect and Contract Reporter.
FRIDAY, APRIL 2, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

WHITEHAVEN.—April 21.—The Town Council invite competitive designs for the laying out of the Coach Road site (6a. 1r. 25p.) within the borough and erection of houses thereon. The author of the design placed first in order of merit may be employed as architect on terms to be arranged, and if not so employed will receive a premium of thirty guineas. The author of the design placed second will receive twenty guineas, and the third ten guineas. Copies of conditions of competition and plan of site and other particulars can be obtained on application, upon depositing £2 2*s.* The Borough Surveyor, Town Hall, Whitehaven.

CONTRACTS OPEN.

ALDERSHOT.—April 7.—The War Department invite tenders for artificers' works contracts for a period of two years from April 1915 in the following Engineer Districts in the Aldershot Command: (1) Blackdown and Deepcut; (2) Bordon; (3) Woking, including Pirbright and Cobham. Forms of tender, conditions of contract, and all information may be obtained upon application at the Headquarter Office, Aldershot, by letter, addressed to the Superintending Inspector of Works, or in person, up to April 1. Tenders to be forwarded by April 7 to the Director of Army Contracts, Imperial House, Tothill Street, S.W. (See advertisement.)

ANGARRACK.—April 9.—For alterations of two houses and shop front, for Mr. Harris. Mr. Harris, Angarrack, Cornwall.

BYFLEET.—April 26.—For the erection of an additional engine-house, gas-generating house, new workshop, and coal store adjoining the present pumping station, Byfleet village, together with engine beds and other building works, for the Chertsey Rural District Council. Mr. Charles Muggleton, Byfleet Corner, West Byfleet.

CALSTOCK.—April 10.—For carrying out certain alterations to playground and entrance at the Council school, for the Cornwall Education Committee. Mr. B. C. Andrew, architect to the Committee, Biddicks Court, St. Austell.

CHESTER.—April 7.—For erection of three blocks of workmen's dwellings to be carried out in connection with the housing scheme, Buddicon Estate, Hough Green, for the City Council. Send applications and £1 1*s.* deposit by April 7 to Messrs. Dod & Dod, architects, D16 Exchange Buildings, Liverpool.

EGLOSKERRY.—April 10.—For erection of a Council school at Egloskerry, for the Cornwall Education Committee. Deposit £1 1*s.* Mr. B. C. Andrew, architect to the committee, Biddicks Court, St. Austell.

FENWICK.—April 22.—For erecting a teacher's dwelling house at Kyloe, Fenwick, for the Northumberland Education Committee. Send applications and £1 1*s.* deposit by April 7 to Mr. C. Williams, secretary, The Moothall, Newcastle-on-Tyne.

GREAT DRIFFIELD.—April 19.—East Riding of Yorkshire Hospital Committee are prepared to receive whole tenders for enclosing and laying-out the site and for the erection of the various buildings in connection with a proposed infectious diseases hospital for thirty-two beds. The work will be divided into two portions, and contractors may submit tenders for the whole of the work or for the portions as divided—viz.: (1) Enclosing and laying-out the site and erection of administration block and porter's lodge; (2) erection of three pavilions for thirty-two beds and laundry block. Deposit £2 2*s.* Mr. B. B. Stamford, architect and surveyor, County Hall, Beverley.

HALIFAX.—April 17.—For the execution of the work required in erection and completion of tramway waiting-room and tool-house, Stump Cross, for the Corporation Tramways Committee. Deposit £1. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

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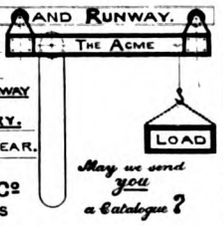
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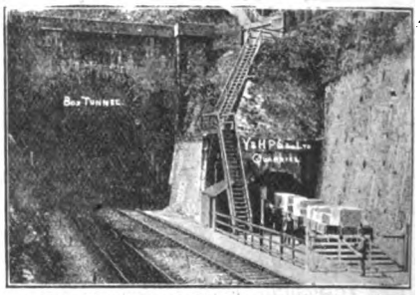
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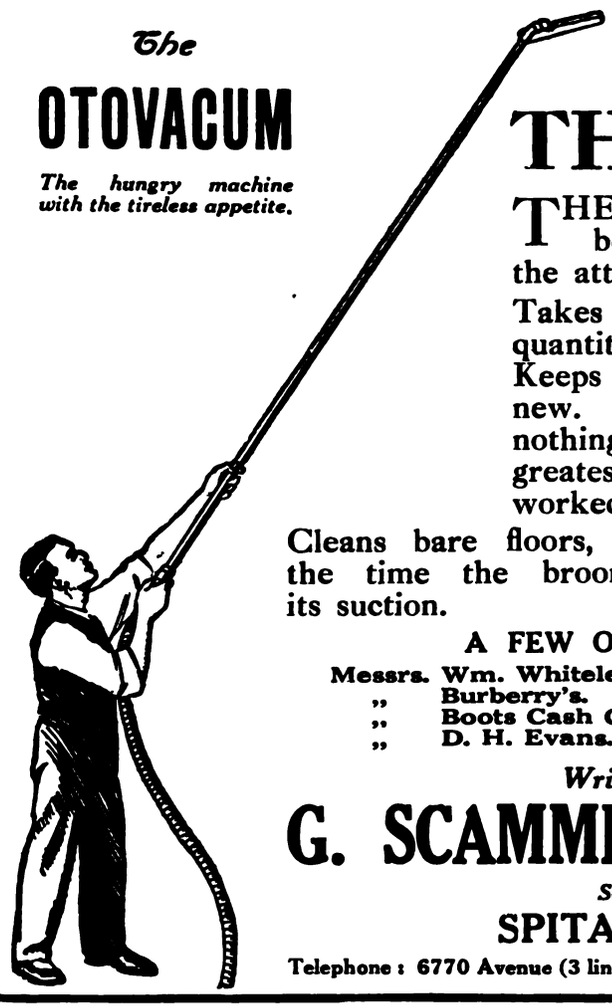

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HARROGATE.—April 12.—For the building of an extractor house and the rebuilding of a boundary wall at the gasworks, Ripon Road. Mr. F. H. Robinson, A.M.I.C.E., engineer, Gasworks, Harrogate.

HYTHE.—April 9.—For erecting a timber-framed and corrugated-iron isolation hospital for eight beds, for the Corporation. Mr. C. Jones, C.E., borough surveyor, Hythe, Kent.

IRELAND.—April 10.—For erection of two temporary blocks for male and female patients at the District Asylum, Ballinasloe, each block to accommodate fifty patients. Buildings to be erected in Hy-Rib system of reinforced concrete. Deposit £2 2*s*. Mr. G. B. Meenan, engineer, 83 Botanic Road, Dublin.

IRELAND.—April 12.—For alterations and additions to Dungannon House, and for the erection of a pavilion and medical officer's residence at Dungannon House, Dungannon, County Tyrone, for the County Council. Mr. James Hunter, B.A., architect, Lisburn, and Mr. C. S. Hunter, quantity surveyor, Scottish Provident Buildings, Belfast.

IRELAND.—April 19.—For alterations and additions to Skerries Station, for the Great Northern Railway Company (Ireland). Deposit £1 1*s*. The Engineer's Offices at Dublin and Belfast.

IRELAND.—April 22.—For alterations and additions to the boiler shop, Broadstone Station, Dublin, for the Midland Great Western Railway of Ireland Company. Deposit £1 1*s*. Mr. W. Purcell O'Neill, chief engineer to the company, Broadstone Terminus, Dublin.

LONDON.—May 11.—For steel constructional work in the extension of power house, for the St. Pancras Borough Council. Deposit £2 2*s*. Drawings may be inspected at 57 Pratt Street, Camden Town, N.W.

MORTOMLEY (NEAR SHEFFIELD).—For rebuilding St. Mary's Catholic Church (which has been partially destroyed by fire). Mr. A. Hartley, architect, County Chambers, Castleford.

PELAW.—For approximately 800 cube yards of general excavating to site of new tailoring factory at Pelaw, including carting excavated material to Society's free tip, for the Co-operative Wholesale Society, Ltd. The Committee, c/o Building Department, West Blandford Street, Newcastle.

PONTEFRACT.—April 3.—For the various works required in erection of a new residence, Carleton Road, for Miss Johnson. Send applications by April 3 to Mr. W. J. Tennant, architect and surveyor, Pontefract.

RUNCORN.—April 6.—For erection of an additional ward, for the Executive Committee of the Runcorn Cottage Hospital. Mr. Wilding, Town Hall, Runcorn.

SALISBURY.—For erecting a memorial hall, Salisbury. Messrs. J. Harding & Son, architects and surveyors, 58 High Street, Salisbury.

SCOTLAND.—The School Board of Lochgoilhead and Kilmorich invite offers for repairs to Lochgoilhead Schoolhouse. Mr. Hugh Campbell, architect, 156 St. Vincent Street, Glasgow.

SCOTLAND.—For the mason, joiner, plumber, plaster, and slater work of proposed additions to Uphall School, for the Parish Council. Mr. Will Constable, architect, 3 Hill Street, Edinburgh.

SCOTLAND.—April 29.—For the wright and joiner works required in connection with the proposed erection of sanatorium and children's home at Southfield, near Mearns, for the Glasgow Corporation. Deposit £1 1*s*. The Office of Public Works, 64 Cochrane Street, Glasgow.

SHOTTON.—April 13.—For erection of fifty workmen's dwellings, the construction of streets and sewers, and all other works connected therewith, for the Easington Rural District Council. Deposit £2. Mr. G. Waterhouse, architect, Council Offices, Easington, Easington Colliery, Co. Durham.

SMALLTHORNE.—April 6.—For erection of a county mining institute and handicraft centre at Ford Green, Smallthorne (near Stoke-on-Trent), for the Staffordshire Education Committee. Send applications and £1 1*s*. deposit by April 6 to Mr. Graham Balfour, director of education, Stafford.

SMETHWICK.—April 7.—For alterations and additions to the administrative block and laundry and the erection of a tuberculosis pavilion, nurses' quarters, boundary walls, &c., at the Smethwick and Oldbury Joint Hospital at Holly Lane, for the Smethwick Corporation. Deposit £2. Mr. A. Hosken, borough engineer and surveyor, Smethwick.

SUNDERLAND.—April 10.—For the construction of a timber-framed lifeboat house, covered with corrugated-steel sheeting and erected on a braced timber sub-structure, together with a timber approach thereto, near the Ferry landing stage on the south side of the River Weir, Sunderland, in the County of Durham, upon the foreshore and river bed thereat. Deposit £1. Messrs. Douglass, Lewis & Douglass, engineers and architects, 15 Victoria Street, Westminster, S.W.

TRURO.—April 8.—For the construction of new clock turret in steel and concrete, new ceilings in Council chamber and adjoining rooms, new mayor's parlour, muniment room, and store room, at the municipal buildings, for the Town Council. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

WALES.—April 7.—For erection and completion of proposed Council schools at Llandyfrydog and Ty Mawr, and for additions, alterations, and repairs to the Council schools at Pentraeth, Llanfachreth, Llaingoch (Holyhead), and Llechylched (Bryngwran), for the Anglesey Education Committee. Mr. J. Owen, F.R.I.B.A., county architect, Menai Bridge.

WALES.—April 8.—For erection of a stone bridge at Cwmfelin Mynach, in the parishes of Llanboidy and Llanwinio, to be built jointly by the Carmarthen and Whitland Rural District Councils. The Post Office, Cwmfelin Mynach.

WALES.—April 19.—For altering, renovation, and erecting certain additions to Tabernacle Congregational Church, Fishguard. Mr. J. G. Martin, secretary, London House, Fishguard.

WOMBWELL (YORKS.).—April 3.—For erection of two cottages in Barnsley Road, Wombwell, for Mr. G. Myers. Mr. J. Robinson, architect and surveyor, Park Cottage, Wombwell.

TENDERS.

BRISTOL.

For the erection of a house in Leigh Woods. Messrs. LA TROBE & WESTON, F.R.I.B.A., architects, Bristol.

Love	£1,425	0	0
Wilkins	1,385	0	0
Wilkins & Sons	1,345	0	0
Stockham	1,315	0	0
Walters & Son	1,277	0	0
Clark & Son	1,240	0	0
Dallow & Sons	1,229	0	0
Humphreys & Son	1,199	0	0
W. FOSTER, Bristol (*accepted*)	1,180	0	0

CHARING.

For alterations to the new Children's Homes, at Rowton House, for the West Ashford Board of Guardians.

Bowles	£500	0	0
Sanders & Co.	466	19	10
Godden & Sons	466	0	0
Howland	461	10	0
Shippam	422	0	0
Knock	417	10	0
T. S. GWINNETT (*accepted*)	375	0	0

HEBDEN BRIDGE.

For the various trades required in the erection of a warehouse in Hangingroyd Road. Messrs. SUTCLIFFE & SUTCLIFFE, architects and surveyors, Hebden Bridge.

Cockroft & Dufton	£1,618	10	0
Frith	1,615	15	0
Wade	1,612	0	0
Wild	1,595	0	0
Mortimer & Sons	1,586	0	0
C. WATSON, Hebden Bridge (*accepted*)	1,494	0	0

IRELAND.

For rebuilding Mettican Bridge (Tirkeeran), for the Coleraine Rural Council.

W. CURRIE, Coleraine (*accepted*)	£720	0	0

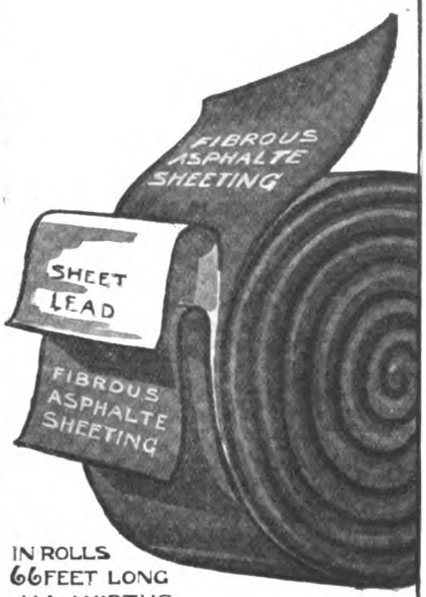
LICHFIELD.

For the execution of the Watling Street sewerage scheme at Hammerwick, for the Rural District Council.

CHILDS & WITHERS (*accepted*)	£1,677	18	0

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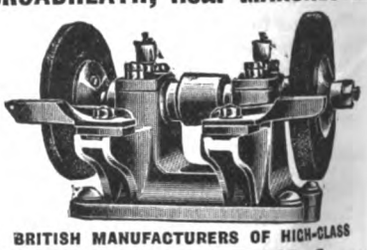
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LONDON.

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THE REINFORCED CONCRETE BUILDING COLLAPSE AT BURY.

IT will be remembered that a few weeks ago three men lost their lives through the collapse of a portion of a paper mill at Bury in course of erection for Messrs. James Wrigley & Son, paper manufacturers. The subsequent inquest was opened by Mr. T. F. Butcher and a jury on March 16, and was then adjourned till Friday last. We take the following report of the Coroner's address to the jury on the latter day from the *Manchester Guardian*:—

The Coroner, addressing the jury, said he thought they would agree with him that the evidence had been given, generally speaking, in a straightforward way. There was one witness who above all others had been perfectly straightforward; he meant Durham (the foreman for Messrs. Greenwood & Sons, of Halifax, the contractors). On the question of criminal negligence their duty had been made more simple by the fact that there was substantial agreement between all the men who had been called before them who could be at all characterised as experts—he meant between Mr. Thomas, Mr. Hudson, and Mr. Murphy (who was responsible to the Rigid Reinforcement and Concrete Co., Ltd., for the design). They all said that this collapse was due, or at all events principally due, to the faulty design of the east side roof trusses. Such design was clearly a matter of negligence, and ought never to have been made. Two important points for them to deal with were, first, whose negligence it was, and, secondly, what was the degree of negligence. On the first part of the question, as to whose negligence it was, he thought it was clear it was not the negligence of Messrs. Wrigley. On March 6 they wrote a letter to Mr. Greenwood stating what they required, and asking for the calculations to be checked, and to be favoured with a guarantee. The reply to that letter stated that Messrs. Wrigley need have no fear of the stability of the building, and giving a guarantee. On the other hand, the questions which the jury had passed up to him on the day previous through their foreman were not questions in which Messrs. Wrigley were uninterested. The questions which they put were: *Re* the non-submission of the plans to the authority: (*a*) Is the contractor responsible (*b*) or are the proprietors (*c*) or are both? That was the first question. Mr. Hudson (the supervisor of the work of erection) cleared that up, as far as it had been cleared up in the course of the inquiry, when he said he desired his principals to submit their plans to the authority, and his principals replied, "We never have submitted any plans." The jury's second question was, Who were the local authorities? That was the Corporation of Bury. Their third question was, Had they a building inspector? Officially he had no knowledge of that, but his pocket-book told him they had a building inspector. The fourth question was, Was it the duty of such building inspector to stop any building until the official plans had been passed?

Regarding the question of plans, it was clear that, despite the representations said by Mr. Hudson to have been made to his principals—of the making of which representations, although they were sworn to, he had very serious doubts—he was inclined to think that it was an afterthought on the part of Mr. Hudson, seeing that he said nothing to Messrs. Wrigley about them, and it appeared to him very unlikely that these representations were then made, because it was impossible to submit plans to the local authority at that time. He (the Coroner) was only a layman, but it did seem to him a somewhat startling thing that that which was the root of the success of the whole thing, the roof, was never dealt with until the other part of the building, generally speaking, had been completed.

One would have thought it would have been a good thing, although it would not have relieved the onus of responsibility, had Mr. Arnot, who was anxious, or had Messrs. Greenwood, who were responsible, seen that the plans were submitted to the local authority. Though the local authority required nothing more than that their by-laws should be complied with, it would have been at least helpful to have had the criticism of the local authority, and it might possibly—he did not say it would—have prevented the plans being gone on with in the way they were.

He was bound to advise them that he did not think any jury at assize would convict Mr. Hudson, who was responsible for Messrs. Greenwood, for neglect in this instance, seeing that it was the design which was the cause of the failure. At the same time, he could not help feeling that Mr. Hudson had been the least satisfactory witness they had had before them. According to his own story he had displayed a wonderful capacity for shirking his responsibility. It seemed strange that Mr. Hudson had taken no care beyond accepting the assurance of Mr. Murphy as to the stability of the roof, and had overlooked such minor matters as the segmentary nature of the eaves wall and the proper dimensions of the ridge of the roof. These were comments which he thought ought to be made upon Mr. Hudson's evidence. He thought he was free of criminal responsibility, by reason of the undertaking of the Rigid Company, but, as he said earlier on, he was the least satisfactory witness who had been before them.

Then on the question as to the person who, if any, had been guilty of criminal negligence, that was the ground work of the whole thing. Mr. Murphy was the only person upon whom that responsibility could be fixed, if it could be fixed upon anyone. He was sure that Mr. Murphy's evidence would receive their sympathetic consideration, but their sympathy would not cause them to forget that a person having or claiming skill in designing a building must use reasonable care to secure that persons employed in the construction or afterwards in occupation should not be in peril of their lives. Any monetary payment due as compensation to the relatives of the deceased men could not be sufficient recompense for the loss of life. It was their serious duty to decide whether Mr. Murphy had been guilty of such negligence. He left it to them to consider whether these men's deaths resulted from misadventure or through criminal negligence.

THE JURY'S FINDINGS.

The jury returned their verdict in the following terms:—

"The cause of the deaths of these men is the collapse of the building through faulty design. The jury wish to express their deep sympathy with the relatives of the unfortunate victims, and also with those who have suffered injury. The accident is the result of grave errors made in the design of the roof, as admitted by the designer, Mr. Murphy, but the jury do not hold him guilty of criminal negligence. The jury is of opinion that the contractors should have submitted the plans to an expert before giving a guarantee. It is regretted that the plans were not submitted to the Corporation of Bury. The jury consider the supervision of Mr. Hudson to be lax, and he is deserving of censure, although he was pressed by Mr. Arnot."

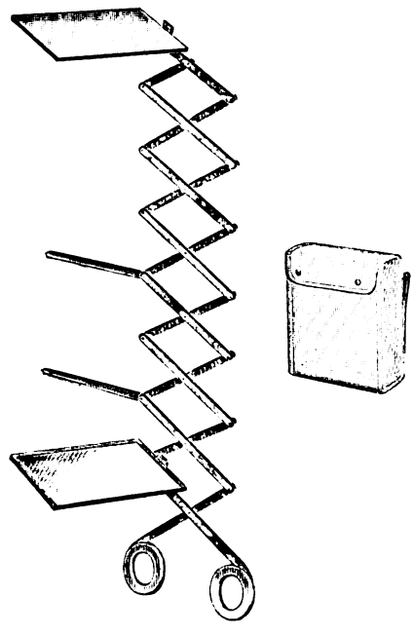
The Coroner entered a verdict that whilst the men were engaged in the erection of a machine house the building collapsed through misadventure and fell upon them, inflicting mortal injuries from which they died, and said he would annex the jury's observations to the verdict. He did not think he need add anything to what the jury had said about censuring Mr. Hudson.

THE Hull Corporation Works Committee recommend the appointment of Mr. F. W. Bricknell as city engineer, in succession to Mr. A. E. White, who retired last year. Mr. Bricknell, who entered the service of the Corporation thirty-eight years ago, as a pupil, has, since Mr. White retired, acted as city engineer. The salary is £750, with annual increases of £50, till the maximum is reached.

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A TRENCH PERISCOPE.

In numberless letters from the newly arrived in the fighting zone one finds delighted reference to the presence of motor-omnibuses and wagons, still with their civilian names, giving a vivid touch of home. The same feeling of intimacy will assuredly come to any and every man from the drawing-board who, having dropped the compasses for the rifle, is presented with a "Stanley" periscope as made by that excellent firm of scientific instrument manufacturers, Messrs. W. F. Stanley & Co., Ltd., 286 High Holborn,



W.C. There are, of course, a bewildering variety of periscopes now on the market. But as will be seen, the "Stanley" embodies a new principle and is marked both for its portability and the large field of view of the mirrors. It appears to be a thoroughly practical instrument. The strong collapsible aluminium frame has two spikes for fixing into the side of the trench. The mirrors are of carefully selected plate glass, size 5 inches by 3 inches, well protected by metal sheaths. A spare mirror is provided (which, we might suggest, can be used when shaving), and the whole is contained in a strong waterproof canvas case measuring 6½ inches by 7 inches by 1¾ inches. For the price of 25*s.* complete (packed and delivered free to any soldier at the Front 2*s.* extra) one can send a gift to an erstwhile Knight of the Compasses which may save his life.

VARIETIES.

Mr. Edward Green, of Park View, Abington, Northants, builder and contractor, left estate valued at £35,215 gross, net personalty £4,338.

The Darfield Urban Council have resolved to apply to the Local Government Board for sanction to a loan of £16,218, for the purpose of working-class dwellings.

Extensive alterations and additions are being carried out at "Holyport," Maidenhead. The contractors are Messrs. Wm. F. Blay, Ltd., Railway House, Dowgate Hill, E.C., and at Dartford, Kent.

The Rossington Main Colliery Company have purchased eighty-four acres of land for a village for their new colliery at Rossington, near Doncaster. They are going to make a model village of 700 houses of a type in keeping with many well-laid-out colliery villages in South Yorkshire.

The Mersey Docks and Harbour Board have suspended their Standing Orders to facilitate the building of a shed to relieve the pressure. The shed is to be a light single-storey building, 400 feet long by 180 feet wide. The cost, together with certain paving, is estimated at £19,850.

We are informed that the (U.K.) Winget Concrete Machine Co., Ltd., in order to facilitate business, have shortened their title to Winget, Ltd. They have also taken new and more commodious offices in London at 25 Victoria Street, Westminster. Their head office is 5 Star Buildings, Newcastle-on-Tyne.

A joint sub-committee of the Finance and Electricity Committees of the Poplar Borough Council which has been considering the question of the disposal of the surplus profits of the electricity undertaking has issued a report in which it approves of the suggestion to reduce the price for private lighting from a flat rate of 4*d.* per unit to 3*d.*

At the meeting of the Scunthorpe Urban District Council, a letter was read from the Scunthorpe Master Builders' Association, in which the secretary, Mr. P. Holland, on behalf of the Association, objected to the Council doing its own work. As ratepayers they considered it distinctly unfair, for it deprived them of their means of livelihood. They contended that the fairest way was to give work to the lowest tender, and not use public money against local traders. The Chairman of the Council argued that the Council had the right of the same privileges as an individual, and as far as it could should carry out its own work. The Council decided to acknowledge the letter, but to do nothing in the matter.

In view of the increase of work that has been laid on the Local Government Board for Scotland under the Housing Acts, and more particularly in connection with the scheme for the housing of Admiralty employees at Rosyth, the Board have appointed Mr. George D. Macniven, Licentiate R.I.B.A., of the firm of Messrs. Greig, Fairbairn & Macniven, architects, to be assistant architectural inspector for the period of five years. Mr. Macniven received his early training under Mr. G. Washington Browne, R.S.A., and later served as a draughtsman in the office of Messrs. Dick Peddie & Washington Browne. Mr. Macniven for the past five months has also occupied the post of assistant master of the architectural section of the Edinburgh College of Art.

A memorial address has recently been presented to Mr Robert Baldwin Ross, the art critic and writer, and among the 300 distinguished signatories appears the name of Mr. Reginald Blomfield, R.A. It has been recalled that Mr. Ross a few years ago astonished the public by devoting the first of his series of articles in the *Morning Post* on the Royal Academy to a brilliant account of the architectural room. Subscriptions were also invited towards a gift or memorial to Mr. Ross, and a sum of about £700 has been secured from among the signatories. It was found that Mr. Ross would prefer that the fund should be devoted to a public object, and at his suggestion an offer was made that it should be applied to the foundation of a "Robert Ross" Scholarship in the Slade School of Fine Art at University College, London, an offer which has been accepted by the Senate of London University. A sum, however, of £50 has been reserved for the purchase of a piece of silver or other object for Mr. Ross as a more personal token of friendship and regard.

Messrs. Lever Bros., Ltd., of Port Sunlight, Cheshire, were the claimants in an arbitration opened on the 25th ult. before Mr. F. G. Chinnock as arbitrator at the Surveyors' Institution. The claim was for £180,000 from the Corporation of London in respect to the acquisition of their leasehold interest in property known as Sunlight Wharf, George Yard, Upper Thames Street, E.C., under the Corporation of London (Bridges) Act, 1911, for the purpose of building the new St. Paul's Bridge over the Thames. There was a further claim of £50,000 for disturbance, making a total of £230,000. The case was to have come on again last Monday for a third day's hearing, but did not do so, a settlement having been come to between the parties on the following lines, which is to be embodied in the arbitrator's award: Messrs. Lever Bros. are to remain in permanent possession of that portion of the land which was first built upon by them, representing more than half the land leased by them from the Corporation. As regards the remainder, they are to remain in possession until the contractors for the bridge works shall give them three months' notice. Upon the completion of the bridge works the Corporation has undertaken to grant a lease for eighty years of the first-mentioned land, together with a certain defined portion of the last-mentioned, and a space under three arches of the new bridge, at a total rent of £1,943. Messrs. Lever Bros. have agreed to erect on the new land to be leased to them a building similar in character to the existing buildings to a height not exceeding 100 feet, in respect of which building the Corporation have agreed to pay the cost, not exceeding £40,000. The new buildings are to have a frontage on the new bridge road for their entire length, with access to the road. Any ornamentation required by the Corporation on their new building, as well as on the old building, which will remain on the land not taken by the Corporation, will be executed at the expense of the Corporation. The Corporation has agreed to pay Messrs. Lever Bros. the sum of £47,500 for the disturbance.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, April 12.

Surveyors' Institution : Short Papers entitled "The Report of the Land Enquiry Committee on Housing," by Mr. C. S. Joseph and Mr. R. Strachan Gardiner, at 8 P.M.

Wednesday, April 14.

Society of Architects : Concert at the King's Hall, Holborn Restaurant, at 8 P.M.

Edinburgh Architectural Association : Associates' Business Meeting, at 8 P.M.

Institute of Sanitary Engineers : Paper entitled "Corrosion of Iron and Steel Pipes and the Protective Methods to be Adopted," by Mr. W. J. E. Binnie, M.I.C.E., F.G.S., at 8 P.M.

Thursday, April 15.

Society of Architects : Paper entitled "Artificial Lighting in Relation to Architectural Effects," by Mr. Stephen D. Chalmers, M.A., at 7.30 P.M.

Surveyors' Institution (Irish Branch) : Annual Meeting at 110 Grafton Street, Dublin, at 11 A.M.

Friday, April 16.

Town Planning Institute : Paper entitled "Replanning and Redevelopment in Existing Centres," by Mr. W. T. Lancashire, M.I.C.E., and Mr. H. V. Lanchester, F.R.I.B.A., at 8 P.M.

THE CHURCH PORCH.

THE function of the church porch has now been so generally forgotten that it would not be surprising to hear the question asked why a church should have a porch, and why, when it has one, it is usually, especially in mediæval churches, on the south side. The porch, as an essential feature in a church, has not come into existence merely as an ornament nor as an expression of importance for the south entrance. In the first place, the porch to some extent filled the function of the narthex in the early Christian Church, for as this latter was allotted to the catechumens, or those preparing for baptism and those undergoing penance, so in mediæval England the same principle was observed in a modified form by the performance of the first part of the baptismal service and by the reconciliation of penitents on Maundy Thursday within the porch. Penitents, after being signed with the holy ashes on Ash Wednesday, were solemnly ejected from the church to the sentence "In the sweat of thy face, &c." On the morning of Maundy Thursday—Shrift Thursday—the penitents assembled in the porch before mass to receive the absolution. Thus they were reconciled and again numbered in the company of the faithful and allowed to participate in the holy mysteries.

Baptism of infants, for adult baptism was almost unknown in the Middle Ages amongst peoples who had for centuries held the Catholic Faith, was performed in a ceremony of which the first part took place in the porch, whither the infants were brought by their sponsors and there received by the priest, breathed upon, and salt administered before entering the church. Thus, like the catechumens of mature age in the early days of Christianity, their first station was the porch. The churching of women was formerly in the porch, until the priest led the woman into the church, saying "Come into the temple of God. Adore the Son of the Blessed Virgin Mary, Who has given thee fruitfulness in child-bearing."

In mediæval England the rite of marriage was performed in the church porch. In the Instructions to Parish Priests we read:

> Then let them come and witness bring.
> To stand by at their wedding;
> So openly at the church door
> Let them either wed the other.

Chaucer, also, in the prologue to the "Wife of Bath's Tale," makes that worthy say "Husbondes at chirche dore have I had five." The marriage ceremony was clearly regarded as a business contract, entered into by word of mouth, in the presence of witnesses and with the sanction of the Church. It was there, too, that the dowry was defined, and from this custom a dowry was known as *Dos ad ostium Ecclesiae*. After the business portion of the marriage ceremony was completed the wedded pair received the nuptial benediction and entered the church for the celebration of the mass of the Holy Trinity. An allusion to the function of the porch as the place of the marriage ceremony is probably the explanation of the true-lover's knot to be seen on the boss in the vaulting of some church porches, whilst still more explicit is the sculptured representation in stone of the espousals in the southern entrance of Norwich Cathedral.

Burial within the porch seems to have been regarded as a special honour, even long after interments were permitted inside the church, possibly from the traditional effect of the restriction of the Council of Nantes in 658 A.D., when for the first time intramural burial was permitted as an honour to the illustrious dead, but only within the porch. Thus St. Augustine was buried in the north porch of the new monastic church of SS. Peter and Paul outside Canterbury; King Ethelbert and his queen were buried in St. Martin's porch of the same church. Lateral tombs remain in the porch of Chichester Cathedral and the Galilee porch of Lincoln; many others may be seen in similar positions in parish churches, and it has been suggested that the lateral stone benches found in very many porches may have originated as a protecting cover to monuments, to preserve the incised or sculptured coffin-lids, or effigies in low relief. An elaborate example is seen at Orpington of a large canopied tomb of the fourteenth century, which occupies the whole northern side of the large western porch. No inscription remains, but documentary evidence tells us: "Corpus meum ad sepeliendum in porticu ecclesie predicte per me de novo constructo et volo quod bulla indulgencie meo corpori alligatur. Nicholas, rector, 1 Aug. 1370."

In the Palm Sunday procession and its accompanying ceremony the porch played an important part and a gallery, either temporary or permanent, for the stationing of "the Angel" or "the Prophet" seems to have been an essential adjunct, for many churchwardens' accounts record the payments made for such galleries and the "leddyr" thereto, whilst in many porches there still remain evidences of supports for stairways leading to the gallery, and many more, no doubt, have been cleared away during "restoration," their purpose being forgotten and no obvious reason for their existence occurring to the uninstructed minds of the restorers.

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Another Easter ceremony which found its place in the church porch was the lighting of the new fire, or "hallowed fyer," during the ceremonies of the Paschal vigil on Easter Eve. This long service commenced after all fires on the hearth, or burning wicks, were extinguished, both in church and in the home. The extinction of the lamps signified the abrogation of the Old Law, and the new light was symbolical of the New Covenant of Christ, the Light of the World.

Besides the liturgical uses of the church porch, it also served several specific secular uses. Thus it was frequently the seat of a judicial court, a function that perhaps arose first from the practice of "sanctuary." For the accused or guilty person who claimed this privilege was thereby not scot-free, but only obtained safety until such time as he could be brought to trial by the justices of the Crown, or his feudal lord invested with limited judicial power. As the right to sanctuary would be forfeited by the removal of the accused from the sacred precincts, it is obvious that the natural course would be for his trial to take place within the porch. The larger form of porch known as a Galilee and the room over a porch termed "parvise" would especially be found suitable for the purposes of a judicial trial. Eadmer, in his description of the first cathedral at Canterbury, says: "The south tower has an altar in the midst of it, which was dedicated in honour of the blessed Pope Gregory, which, as of old by the Angles, so even now is called the *Suthdure*, and is often mentioned by this name in the law-books of the ancient Kings. For all disputes from the whole Kingdom, which cannot be legally referred to the King's court, or to the hundreds, or counties, do in this place receive judgment." At Lincoln the "Curia vocata le Galilee," as far back as the reign of Edward III., was held in the room above the great southern porch or Galilee, and there offences committed within the precincts of the Chapter's jurisdiction were tried. Durham, also, had its "Curia in Galilee." At Cirencester, down to quite a late period, the assizes have been held in the parvise chamber.

The use of a room over the narthex for the instruction of candidates for baptism in the early Christian Church gave precedent which was followed largely throughout the Middle Ages for the giving of instruction in a room attached to the church, and so the parvise chamber frequently formed the location of a school, and the church of St. Clement, Sandwich, the song-school at Chester, and the examination for Responsions at Oxford in the parvise of St. Mary's Church, are notable examples of such use.

It seems to have been the fact that fairs had their origin in the dedication of a church, and their annual observance followed on the successive anniversaries of the consecration. On the night before the ceremony, a vigil, or wake, was kept in the porch or some external temporary structure, around the relics which were to be placed in the sanctuary on the next day. From the sale of food and trinkets gradually grew a custom of general trade.

The restraint of the law relating to sacrilege made the precincts of a church a safe repository, and so the parvise room frequently became a treasury, or muniment room, and even a safe deposit for the valuables of parishioners. From muniment rooms to libraries was but a slight development, when books were both few and valuable. The parish or "church armour" was also kept in the parvise when the unit of local defence corps was the parish.

For those who would make a special study of our mediæval church porches, not only as regards their use, but in respect of their form and adornment, an excellent guide will be found in Mr. Wall's book* on "Porches and Fonts," which gives full descriptions of many of the most notable examples and is illustrated by excellent pen-and-ink drawings or sketches by the author.

* *Porches and Fonts.* By J. Charles Wall, author of "The Tombs of the Kings of England, "Shrines of British Saints," &c. (London: Wells Gardner, Darton & Co., Ltd.)

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

We have received a satisfactory set of drawings of eighteenth-century ironwork.

Mr. B. Fraser has found an excellent and interesting example at Malpas Church, Cheshire, which is of unusual character as having a wicket. There are many interesting points in technique which show that the designer, if not, as was most probable, the craftsman, had an intimate knowledge of smithery. Mr. Fraser's drawing is satisfactory, though a little short of detail.

"Improver" has selected a pair of gates at Clutterbuck Hall, Northumberland, which are somewhat plainly treated in themselves, but in the overthrow show evidence of the study of French work by the designer. The drawing is good and not lacking in detail.

"Harley" sends a drawing of a single panel of wrought iron railing with bronze leaves. The work is palpably as the author describes of French origin. The drawing lacks details.

"Spotus" has measured a well-designed pair of gates from Dulwich, one of the many similar examples to be found in the environs of London. "Spotus" should avoid the use of a wriggly line to indicate age. The iron must be much corroded for such to be truthful. The detail is a perspective sketch of the overthrow.

Mr. Leslie C. Matthews sends a nicely executed drawing of the very fine gates of All Souls' College, Oxford, in which an admirable design is united with good workmanship.

We award prizes of half-a-guinea each to Mr. B. Fraser, "Improver," "Harley," and Mr. Leslie C. Matthews.

As we announced last month, the subject for June next will be the last of the series until the return of peace has released a number of our contributors from their patriotic service with the Colours.

NOTES AND COMMENTS.

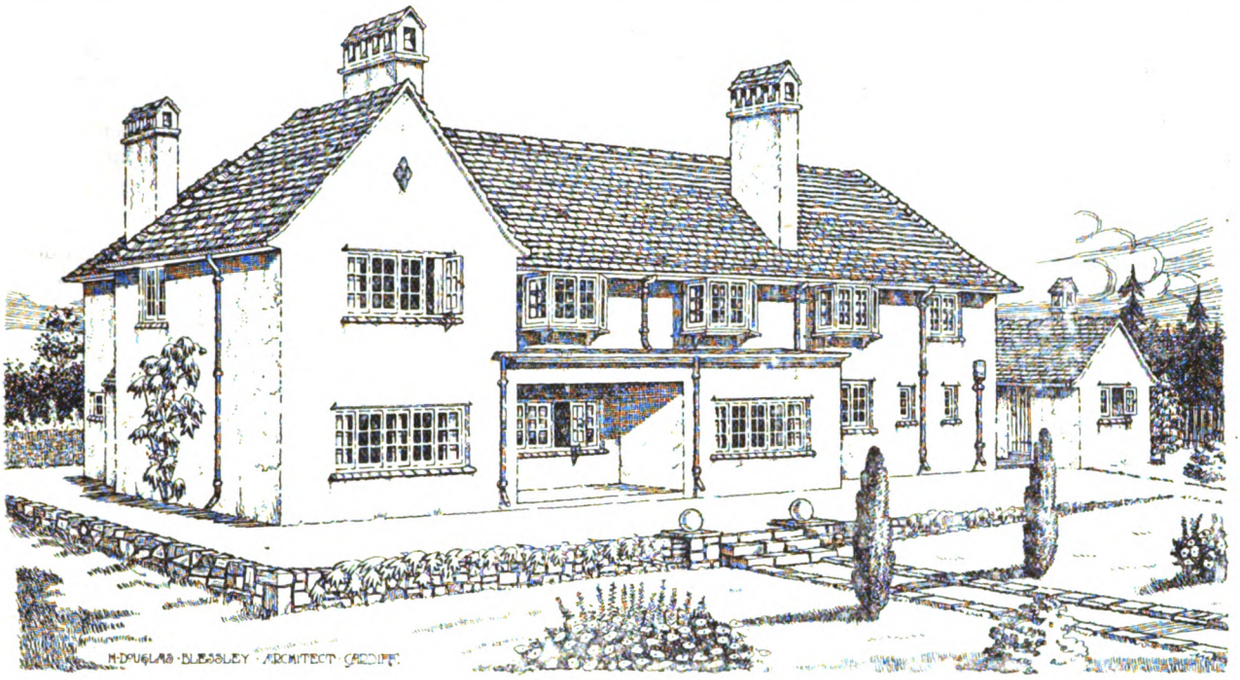
The annual meeting of Messrs. Cammell, Laird & Co., Limited, would seem, as far as this company is concerned, to dispose of the impression that armament firms are making gigantic profits out of the national need. A dividend of 7½ per cent. on the ordinary shares, leaving a balance of only £25,937 6s. out of a net total profit of £237,000 for the year, does not look like an inflated result for the trading of a large manufacturing firm in what must necessarily be considered, for their particular business, as good times. What the country wants at the present time is a dozen more firms with the resources of Cammell, Laird & Co. to work for the Government at 7½ per cent. net profit.

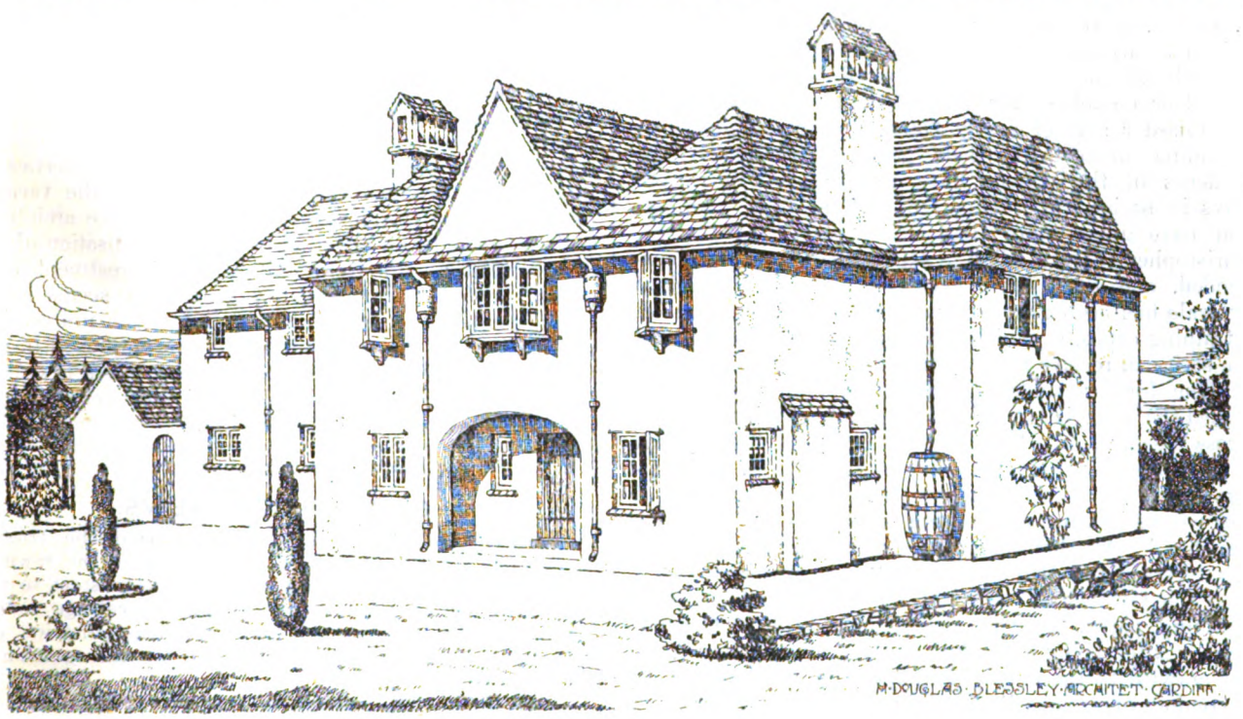
The proceedings of the Public Records Commission reveal an amazing state of things with regard to valuable historical documents. Some of the ancient title deeds of the Bishopric of Winchester have been discovered in the possession of a bookseller at Taunton.

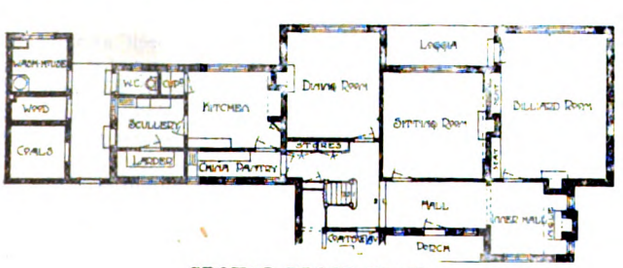
Mr. F. A. Manley, solicitor to the Ecclesiastical Commissioners, said there were some Bishoprics of which the muniments had not been handed over. With regard to Taunton, the Manor of Taunton, or Taunton Deane, was sold by the Bishop of Winchester in 1822, and all the title deeds were specified and given to the Manor, he believed; therefore, they no longer belonged to the Bishop of Winchester or the Ecclesiastical Commissioners, but are in the custody of his successors.

Mr. W. A. Lindsay, the Windsor Herald, who represented the Canterbury and York Society, said the difficulty the public had in consulting ancient documents was due to the Church not being able to afford to keep persons to attend to them. When he wanted to examine some documents while making inquiries as to the life of Samuel Pepys, the diarist, he found that all the registers of the parish of Huntingdon had been lost, and that the custodians of the Bishop's transcripts were a firm of

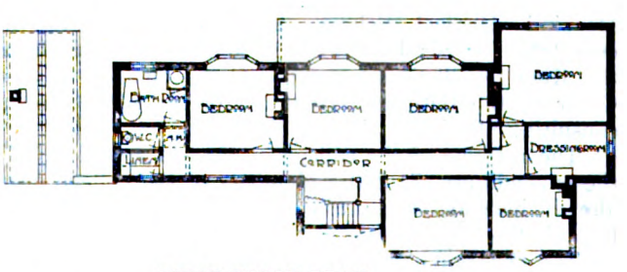
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GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

HOUSE AT LISVANE, GLAMORGAN.—Mr. H. Douglas Blessley, Architect.

solicitors in the archdeaconry. He wrote asking what their fee would be to allow him to examine those transcripts or to do it themselves, and the answer he received was that in either case the fee would be half-a-guinea an hour.

The annual report of University College, London, gives a striking picture of the effect of the war on the prosperity of the college, and also of the extremely honourable position its members and students have obtained by their patriotic services at the present time. For the current session, 1914-15, owing to the war, there has been a decline in the total number of 335 students; there has been an increase in the number of part-time and special students, the decline in full-time students up to the present date being 462. This decline

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is due to the large number of students who are taking an active part in the war. The fall in numbers will involve a decrease in fees of not less than £10,000.

The "Pro Patria" List already issued contains 665 names, distributed as follows: Army, 523; Navy, thirty; Officers' Training Corps (preparing to take commissions), sixty-nine; Red Cross work (women), already abroad, seventeen; Voluntary Aid Detachment, ready for service, twenty-six.

A large number of public lectures in connection with the war has been organised, dealing with various historical and legal matters, and also with the actual effect of the war upon the occupied territories in Belgium and France. These courses include six Carpenters' Company lectures on "The Architecture of Belgian Towns," three of which have been given by Belgian architects—Messrs. Caluwaers, Horta, and Portielje. They include also a course of six lectures delivered by Professor L. Van der Essen, of Louvain, on "Louvain and its University," the proceeds of which, amounting to £65, were devoted to the assistance of refugees from Louvain.

A large number of refugee students has been received at the college each student paying a merely nominal fee. The number admitted since the beginning of the session has been 116; at the opening of the second term the number actually at work was eighty-one. During the first term Professor Louis Gesché, of the University of Ghent, acted as tutor to the Belgian students, and helped to arrange their studies. The college staff, with the help of its friends, has provided hospitality, either partial or complete, for about forty-eight persons, and has raised a sum of nearly £300 to aid the students by providing money for their general expenses. The students of the college have also assisted in various ways in social work connected with soldiers' families, and have given more than usual energy to the St. Christopher's Boys' Club. All football has been suspended, and the Union Society's Athletic Ground at Perivale has been given over entirely to the purposes of a training camp, at which both students and members of the staff can receive military training.

One former student, Captain Martin Leake, who gained the Victoria Cross in the Boer War, has gained the Cross a second time "for most conspicuous bravery and devotion to duty throughout the campaign . . . in rescuing, whilst exposed to constant fire, a large number of the wounded who were lying close to the enemy's trenches." Another student, Lieutenant L. T. Despicht, has received the Military Cross "for conspicuous gallantry at Givenchy," where, "in command of the right storming party, he was almost buried by a German shell. After being extricated he was immediately shot, but crawled to the enemy's parapet and there continued to conduct operations." Sir John Rose Bradford, Fellow and member of the teaching staff of University College Hospital Medical School, has been mentioned in despatches by Sir John French, and has received from the King the distinction of the Companionship of the Order of the Bath in recognition of his services as a consulting physician with the Expeditionary Force.

The revenue of the college in 1913-14 was £71,567, the expenditure £71,260. Members of the college have already indicated their willingness to assist in helping towards the deficit created by the war.

The new building for the School of Architecture was completed in the course of the session 1913-14. H.R.H. Prince Arthur of Connaught visited the building on June 23 and expressed great satisfaction at the arrangement and equipment. The staff of the school has been further strengthened by the institution of a chair of town planning, to which Professor S. D. Adshead has been appointed. A summer school of town planning was held in the new building.

The completion of the other new buildings has been delayed by the war. A special effort on the part of the Equipment and Endowment Fund Committee, of which H.R.H. Prince Arthur of Connaught is President, is to be made to raise the remainder of the sum necessary for the completion of the chemical laboratories. The sum still needed for this purpose is £13,650, the greater part of which (£10,000) is required for the special equipment of a physical and electrical chemistry laboratory. The national need of improved facilities for chemical education emphasises the desirability of completing the equipment of these new laboratories.

At Nuneaton has cropped up the vexed question of public or official control of external architectural design in towns.

At the monthly meeting of the Nuneaton Borough Council the Mayor introduced the question of uniformity in the height of local buildings. He said there were several buildings in the process of erection in Nuneaton. He thought the Council ought to have some power to cause the people concerned to submit plans of the elevation. The buildings would be permanent and would help to frame the future appearance of Nuneaton. It was highly necessary that the Council should have some control over the elevation of buildings, so that the latter would be a credit to Nuneaton.

The surveyor said no town in England possessed such powers. The Council had no power to compel an architect to submit plans of the elevation. There was not the slightest shadow of power held by the Council, and it would require an Act of Parliament.

Several of the worthy councillors wished to have the opportunity of criticising, if not of passing, the "plans of elevations," but London's experience in Kingsway is hardly reassuring as to what would happen in a provincial town. As long as a façade is made up of properties in different ownership, the requirements of the various proprietors and the desires of their respective architects will, we fear, be an effectual bar to the realisation of the dignity that results from uniformity of treatment in a street frontage. Our tendency at present seems to be to get further and further away from such uniformity, and even when the same architects are employed in different parts of the same thoroughfare they seem to delight in emphasising their individuality and their versatility by making radical differences in design.

COMPETITION NEWS.

DARWEN.—After prolonged consideration the trustees responsible for the bequest of £10,000 left to the town by the late Alderman Lightbown have now taken steps to proceed with the scheme for the erection of cottage homes. Land has been acquired in the Sunnyhurst district, and competitive plans are being obtained for the erection of the buildings.

DONCASTER.—The awards in connection with the Corporation's architectural competition for the development of the Carr House estate on model housing lines have been announced. The first prize of £50 has been awarded to Messrs. Ireland & Hanscomb, of West Ealing, for the best site plan, and the second and third prizes of £30 and £20 respectively go to Mr. G. A. Boswell, of Glasgow, and Mr. J. S. Stout, of Whitehaven, for their housing plans in each case.

LIVERPOOL.—The competitive designs submitted for the workmen's dwellings to be erected on the Rathbone Street area will be open for the inspection of the general public, free of charge, for a fortnight, commencing April 8, at the Walker Art Gallery, between the hours of ten o'clock A.M. and six o'clock P.M.

WHITEHAVEN.—Members of the Society of Architects are advised that the Society is in communication with the promoters of the Whitehaven Housing Competition with a view of obtaining amendments to some of the conditions.

MR. BANISTER F. FLETCHER, F.R.I.B.A., is about to give a course of Tuesday lectures, commencing on April 13 and closing on the 27th, at the Royal Institution. The subjects are announced as follows: (1) The War on French Architecture. (2) The War on Rheims Architecture. (3) The War on Belgian Architecture.

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ILLUSTRATIONS.

SIR WALTER ST. JOHN'S SCHOOLS, BATTERSEA.

The above school, the oldest endowed educational establishment in the borough of Battersea, was founded by Sir Walter St. John, the Lord of the Manor and the grandfather of the famous Lord Bolingbroke, in 1700.

The original building was enlarged in 1859 by the late Mr. Butterfield.

When enlargement was found to be necessary the architect to the Governors, Mr. A. Heron Ryan-Tenison, F.R.I.B.A., was instructed to retain as far as possible the late Mr. Butterfield's work.

As some of this work had to be sacrificed the architect measured up the whole of the buildings, having photographs taken as well, so that a complete record should exist.

Mr. Tenison's work harmonises well with the old, and consists of a new west wing, kitchens, a new assembly hall, a new dining room, gymnasium, manual, art, and science training centres, a rifle range, fives court, &c. In short, everything found in an up-to-date secondary school.

The site is a difficult one to treat, but the architect has overcome all problems to the satisfaction of the governors, staff, and everyone connected with this important educational centre.

The L.C.C. have granted some £12,500 towards the expense.

The quantities were supplied by Mr. E. R. Babbs.

The builders are Messrs. Lorden & Son, of Tooting, and the following sub-contractors have carried out the various special works:—Steel work, Cargo Fleet Co.; sanitary work, Pontifex & Co.; casements and lead lighting and wrought iron work, Messrs. Wainwright & Waring; heating, Messrs. Rosser & Russell; tiling, Art Pavements, Ltd.; dadoes, blackboards, Plastolith Diespeker Co.; floors, British Doloment Co.; cloak room fittings, Messrs. Shaw & Carter; locks, &c., Messrs. Spiers, Morton & Co.; rifle range, Messrs. Graham & Lathom; electric lighting, John C. Christie; equipment, the Educational Supply Association, Ltd.

The house and further work will be undertaken shortly from Mr. Tenison's designs.

SOUTH DOOR, ST. NICHOLAS, KING'S LYNN.

A description of the church of St. Nicholas and its south door, which we now illustrate, will be found in *The Architect* of January 8, when we published others of Mr. Walter Gandy's water-colour sketches of King's Lynn.

PEARL ASSURANCE OFFICES, HIGH HOLBORN, LONDON, W.C.

In our illustrations we show both the complete scheme and also the portion already carried out of the new offices erected in High Holborn for the Pearl Assurance Company, Ltd., to replace their former head office at the north end of London Bridge. A competition limited to six architects was held, and the design of Mr. H. Percy Monckton, F.R.I.B.A. (in collaboration with the late Mr. Ernest Runtz, F.R.I.B.A.), was selected. The Holborn façade is of Scotch grey granite up to the second floor window sills, and Portland stone above, with columns and entablature of the Ionic order. At present it only has a frontage of 104 feet, but when completed it will extend no less than 264 feet, forming one of the most noticeable buildings in that thoroughfare. There is but one internal courtyard, and this closely follows the design of the street front. It is entered directly from High Holborn through a lofty archway. The main office and cash department, with public space on the ground floor, has its walls lined with marble to the underside of the fibrous plaster entablature. The main staircase is arcaded, the marble used being in panels. On the first floor is the board-room, designed in a free Georgian treatment, panelled in Cuban mahogany to frieze level, with fibrous plaster cornice and ceiling enrichments. A large waiting-hall opens off the corridor opposite the board-room, with colonnaded entrance in Swedish green monoliths with bronze caps and bases. Very large offices are provided for the clerks, some of which have a floor space of about 10,500 superficial feet. Flat asphalted roofs afford opportunity for staff recreation. A conspicuous feature of these offices as seen from the street is the cupola over the main entrance archway, which rises 160 feet above the pavement.

THE ARCHITECTURAL ASSOCIATION.

A meeting of the Architectural Association was held at Tufton Street, S.W., on Tuesday evening, March 30, Mr. H. Austen Hall, F.R.I.B.A. (acting President), in the chair.

The Chairman proposed a vote of condolence to the family of the late Mr. Walter Crane. Mr. Crane was, said Mr. Austen Hall, a very distinguished artist whose recent loss they all deplored; to him the Architectural Association was indebted for the design of their badge. Mr. Crane had given them a strong sense of need for beauty in their common surroundings, and a proof that art might enter into many activities, and that colour and fine design was as much in place in a wall-paper or a book as in a fresco.

A vote of condolence was also passed in silence by the audience rising in their places to the relatives of Messrs. D. J. S. Dawson, T. W. Dowsett, C. G. C. Payne, and R. W. Willson (members of the Association), who have fallen in the war.

Two nominations for membership were read.

A vote of thanks was passed to retiring members of Council.

Mr. Hall, in introducing the lecturer, Mr. Hilaire Belloc, said they had all read week by week Mr. Belloc's masterly articles on the subject of the war, which had given them an outlook such as they never could have enjoyed without his help and guidance and his enormous knowledge of the facts. Such an occasion made it not out of place to say what the Association has been doing. The usual activities of the students had been largely replaced by work which they believed to be of greater utility; at the present time they had four hundred members serving with the forces, while their recruiting bureau on the premises had in all enrolled over five hundred men. The Association organised an Architects' Volunteer Training Force, and there was a committee under the Presidentship of the wife of their President (Mr. Maurice E. Webb). Nearly 1,500 men had been communicated with by this committee, and parcels as well as professional papers are sent off weekly. The work of visiting mechanics' families and others was carried out by their committee. But they very much wanted further funds, and if they met with the necessary assistance they would increase their scope and expand in a very much-needed and much-appreciated branch of military activity.

Mr. Hilaire Belloc then gave a lecture entitled "The Changes in the Conception of Artificial Permanent Defence, including those indicated by the present Campaign." His thesis was, he said, a very simple one, having no technical character about it. The subject of permanent defences as a whole was, of course, of high interest to architecture and on the æsthetic side, for with the exception of religion there was no force which has done more to differentiate the styles of different peoples and places. His thesis was briefly this: that whereas it is a commonplace that fortifications of any kind, and particularly permanent fortifications, change in character with the development or decline of the weapons, yet it is not recognised with what tardiness the change takes place, and what an advantage the nation enjoys which is least tardy in that change and the disadvantage of those who lag behind. All nations will again be put to the test in a very brief space of time. So true was this that quite a number of the great campaigns of the world have been decided against the nation or party slowest in making the change of their fortifications. An historical example of this occurred in the Civil Wars in this country when the side which pinned its faith to the old type—the castle—was ruined. A much more recent example was in the present war, when the French nation was very nearly defeated through their attachment to the old ringed fortress and the belief that Liège and Namur could hold out for a considerable space of time.

The lecturer remarked that fortifications of any kind might be defined as the creation by man of an obstacle where no obstacle existed before or the improvement by man of an obstacle already existing. An obstacle is any area progress over which is slower than over the surrounding area. An obstacle was, therefore, only a comparative thing. The difference between temporary and permanent fortifications is most important. The best rough test to distinguish them is that of motive. Temporary fortification is fortification arising in the course of a campaign, and not intended to exist after the campaign is over. Permanent fortification signifies something generally designed in times of peace and intended to have long resistance power during one campaign and perhaps be used for another.

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One of the questions which will crop up after the war is whether permanent fortifications are worth keeping up from the military point of view. The use in action of any military obstacle was that it allowed the defenders to differentiate in time between the various operations. The motive for all obstacles could be reduced to causing some form of delay; or, as Napoleon had said, and as was understood long before, fortresses exist to gain time. No fortification was absolute. In spite of what certain people said, there was no such thing as deadlock in war. A fortification delayed the enemy, but it was never an absolute thing. It existed for the purpose of imposing upon the enemy action up to a certain turn, and if action was not taken to that turn the fortification was a failure.

The end to which permanent fortifications are designed is sixfold—(*a* and *b*) first, for the defence of troops you form your permanent fortification in order to check the advance of the enemy towards it and to permit the egress of the defenders from out of it; (*c* and *d*) a permanent fortress must be designed to give the maximum of peril to the attack and the minimum of peril to the defenders; (*e* and *f*) the permanent fortress is constructed with an eye to make it as difficult as possible for the enemy to use his weapon against the defender, and as easy as possible for the defender to use his weapon against the other. In highly developed schemes of permanent fortification there is a compromise between these various objects to be attained. According to the type of weapon used, one and another, or one pair and another, of these ends is emphasised. At the present day, owing to the high explosives, it is "d" which is emphasised. Till lately it was a theory that one must think primarily of egress.

Permanent fortifications being very expensive in all periods, their creators require to be plumb sure it is worth while, or they will not undertake them. For the same reason, when one has got that permanent fortification, it acts like a brake and makes the possessor stick to it after it has become obsolete. That point will probably be the strongest at the end of the present war, when the question of fortification has to be reconsidered.

For the purpose of showing the tardiness with which changes in fortification have occurred compared with changes in the manner of attack, Mr. Belloc traced the history of defences from the time of the mound or hill fortified on the top. When the Romans came, however, they built their camp down on the flat close to the hill where the barbarians had erected their defences. This introduced the wall as a defence, but it was a long while before general adoption. Up to the sixteenth century the wall got more and more complicated. Progress was, however, very tardy, with good intervals between each change. Indeed, a very great deal of human history turns on this point of tardiness. But as early as 1331 cannon were used for the siege of a town—that is, to batter down its walls. A century and a half later the Italians began to see it was high time to have a new form of defence against such weapons to replace the wall. This was found in an adaptation of the old earthwork. But it took about fifty more years to get into people's heads that the earthwork had come to stay. The ever-increasing effectiveness of the cannon caused fresh developments, though but slowly. In the nineteenth century the ring fortress was a sound proposition until the hidden howitzer and then the mobile howitzer and the high-explosive shell arrived. Yet the ring fortress still remained. In 1890 Clarke produced a book on this subject which was the beginning of a revolution—that book ought to have changed the fortifications throughout the world. Clarke's point was briefly that the future would belong to the *points d'appuis*, and that an important fort was a mistake. This war has shown his prophecy to be sound and his judgment true. Another great modification has now come.

First of all he would suggest that although permanent fortifications might be condemned by many, they would never be condemned by sound military judgment. The man who understands war best will win the war. There will always be natural obstacles, and the strategist, unless he is an idiot, will use them and try to make them still more of an obstacle. But the question may arise, "What about expense, and is it worth sinking so much money into such works?" But it is unquestionable that if you have spent no money on fortifications you are in a still worse case than if you had spent it and made a mistake. If you are going to have a quantity of temporary work undertaken after war breaks out, or just before, you will want a careful study of terrain for temporary batteries. Therefore the secrecy of plans will be of greater importance than ever before. Restriction of area and known site would have to be eliminated, and they would best be eliminated by defence trenches on sites which the enemy did not know, many of which trenches might be permanent. Within that position there must be kept the heaviest weapon of the time. If this war had shown one thing more than another it was that whether on land or sea it was futile to have guns second best in range or weight. Every naval battle has gone to the biggest guns. There must also be the largest possible accumulation of stores and food and munitions; very strong underground encasement for keeping men, stores, &c.; a very large garrison, because of the largeness of the perimeter; and plenty of room for the parking and departure or arrival of aircraft, of which there must be a lot. All this meant that the permanent fortification of the future, to be useful, will have to include a very large area. Nations will first of all have to answer two questions—(1) Shall we permanently fortify or not? and (2) Is not the modern system of such vast expense that it must give us peace? In his opinion the wise nation would say, "Though our means will not permit us to create a very large number of these places, some must certainly be created, or in time of war we shall be heavily handicapped." Each junction of railway lines will be an example of such fortresses.

Britain was different, but here two things were essential. First, the concentration of armaments in certain spots capable of fortification; secondly, the fortification of the land fronts of the naval bases and dockyards. The future instrument for fighting the sea enemies will be submarine, and these must be made somewhere. As the first object of an enemy would be to get at our submarine base, that base must be strongly fortified. For seventy years we had more and more drifted away from the idea of fortifying our naval bases. The final blow was given to it by the Blue Water School, which argued that if our Fleet was victorious the fortifications would be of no use, and that if our Fleet was defeated their use would also be gone. There was, however, a third position in which, though we had suffered a defeat, we had not been knocked out, and then a fortified base would be of immense service.

It was probable that after this war both France and Germany would have great entrenched camps fortified as he had suggested. India would need one, and perhaps Egypt as well. In conclusion, Mr. Belloc said this was the first time anything of this kind had been publicly said, and he hoped his words would set the ball rolling. Against the chief objection of the expense involved he had tried to provide counter-arguments.

DISCUSSION.

Mr. Stanley Peach, in proposing the vote of thanks, remarked that he could honestly say he had rarely listened to a lecture which gave more food for thought. Mr. Belloc pointed out that in the area of human endeavour in which they as architects were most interested there was a good deal they might think about to help their country when the question of defences arises. At present architects had not followed in the footsteps of their predecessors who studied the military side of their work. Instead they had concentrated on the religious and the domestic. Yet a good deal of the picturesqueness and interest of our domestic architecture arises from the military work which those predecessors carried out. All of them must feel rather sad to-day when thinking how they as architects had allowed military matters to drift away so much. But the Architectural Association was now using its best endeavours to make up for this remissness.

Mr. W. Curtis Green said he could only emphasise the very great obligation under which the Association lay to Mr. Belloc for attending and giving them so much of his valuable time. Personally he (Mr. Curtis Green) was one of those hundreds and thousands of Englishmen who had followed Mr. Belloc's written words from the time the war broke out, and he believed the country was under an immense debt of gratitude to him for explaining to the ordinary man and bringing within the grasp of the ordinary mind the meaning of modern war. They could all of them look back to those dreadful days when they were not sure whether this country was going to do the right thing or whether it was going to make the same mistake as in 1862 and in 1870. That mistake we and our Allies were now paying for.

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WROUGHT-IRON GATES FORMERLY AT BERRYSTEAD, OUNDLE, NORTHANTS.

Mr. H. Austen Hall, before putting the vote of thanks, said that hundreds of thousands were indebted to Mr. Belloc for explaining these matters. They as an Association were intensely indebted to him for explaining the effect of the development of warfare on building. They had, largely through Mr. Peach's enormous labours, fulfilled their duty as to providing men. But there were very many men who could not join the Army. Such a lecture might open their eyes as to possibilities in designing camps, barracks, &c., and might they not hope eventually to be allowed to help in the designing of great fortifications? In Florence he had seen Michael Angelo's sketches for the city gates.

The vote of thanks was then carried by sustained acclamation.

ANDENNE.

By John A. Randolph.

Of the many localities in Belgium, great and small, that have been mentioned in the papers in connection with the wholesale massacre of their innocent inhabitants, Andenne stands out as probably the greatest sufferer of any after Louvain and modern Tamines, this latter being a large, rather poor, straggling town on the brow of a steep incline and surrounded by coalfields. Its junction is of great width, and its many lines, when we were held up there for a couple of hours at the end of last April to wait for our train on to Jemeppes and Gembloux, were busy with a large number of goods trains and light engines shunting in all directions. There was nothing architecturally to deplore when the news of its sacking reached England. Of Andenne, however, one must speak otherwise. Historically interesting and of remote antiquity, though not bigger than Dinant—it had 8,000 inhabitants—it was picturesquely situated on the banks of the Meuse, seven miles south of Huy towards Namur, and opposite the little settlement of Seilles, the railway station, with which it was connected by a bridge.

Passengers will remember it by the limekilns close to Seilles station, while at Andenne were several factories of paper, faience, &c.

There was already, in the seventh century, a convent here, founded by St. Begga, daughter of Pepin of Landen, in 680. She was the mother of Pepin of Heristal.

The small collegiate church is dedicated to her and contains—if not already removed to Berlin—a Renaissance reliquary of the saint.

The convent, which she endowed for thirty-two sisters (canonesses) of noble family, had a brilliant and, at times, troublous existence for just over 1,100 years. The sisters were not bound by vows to abstain from matrimony. The beguinages as we know them were based on the same conventual rule.

The little town made early acquaintance with, and had a full share of, the horrors of pillage and fire, having been ravaged by the Normans in 883; and in 1054, in the war of the blind Count Henry against the Bishop of Liège, Henry II., town and convent and church were completely ransacked and the fine old stone bridge destroyed.

In 1275 a most extraordinary struggle took place a few kilometres away, at Gives, where the ruins of Beaufort Castle surmount a rocky eminence. That castle was practically independent till its lord, Jehan de Beaufort, was obliged to have recourse to the celebrated Guy de Dampierre, Count of Flanders and Namur, and to recognise his vassal. It was owing to a cow having been found straying in a certain field. The bailiff of Condroz fined the proprietor, an inhabitant of Ciney. The peasant, however, was absent at a tournament at Andenne, where he was recognised, seized, and immediately hung. Jehan de Beaufort thereupon declared war on the Andennais, in which all the Princes of the Netherlands joined; the provinces were deluged in blood, farms were ruined, and towns burned down, the loss of life being more than twenty thousand.

The dispute was brought at last before an arbiter—Philippe le Hardi, King of France—who was successful in making peace.

Yet again, in 1467, did armed men pillage and set fire to the town, the invaders that time being the Liègeois. In 1554 the whole of the Meuse Valley was ravaged by the French, who also completed the destruction of Beaufort Castle, which had been pillaged and much damaged in 1429 by the inhabitants of Huy.

The general aspect of Andenne, backed by the high range of hills at a short distance from the place, was very similar to that of the townlets of Hastière, Anseremme, and many others, and of the town of Dinant (excepting that there are no rocks or citadel at Andenne). The Quai is wide and

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irregular, and the simple houses on it were low and free from architectural ornament as a rule, and many were grey or dirty white. A few estaminets were dotted about here and there, and the streets were narrow and irregular, the church standing among them at a little distance back, and not rising, as to its nave and choir, much above the house tops. The tower is square, plain, and not lofty, and with a high roof or small spire; but there are many picturesque little points of view of the church from the surrounding thoroughfares, and the streetlets themselves contained quaint little fronts and rooflines to the houses.

Andenne was, till the enemy ravaged it, a pleasant little place in which to spend an odd hour or two on a jaunt along the delightful banks of the Meuse. When the rebuilding takes place it is to be hoped the local features will be reproduced and no pretentious structures or garden city arrangements or London suburb monstrosities allowed to turn the place into a vulgar piece of unmeaning modernity. Local people know best what suits their needs, and they have to pass their days there—not strangers on fleeting visits.

Probably some monument will find its place on the Quai to recall the fact that the townlet suffered from five visitations of an enemy, the last one—of 1914—being the worst; but that memorial should be as simple as possible, and not of the aggressively classical and unmeaning style so prevalent in large towns and cities. A sort of village cross, with inscribed panels on its sides, would be as appropriate and as satisfying as it would be modest and unpretentious.

What a thorough revision Baedeker's guides to Belgium and North France must undergo for their next edition! And what a damning confession they will have to contain!

LONDON COUNTY COUNCIL.

THE Finance Committee of the London County Council last week presented a lengthy report, dealing with certain negotiations which had been proceeding between the Council and His Majesty's Treasury, upon the question of the desirableness of capital expenditure by local authorities in the United Kingdom being restricted within the narrowest possible limits at the present time. Apart from the effect such a restriction would have upon loans advanced by the Council to Metropolitan Borough Councils—and although the Committee abstain from making the statement in precise terms—it seems not unlikely, if the restriction be pressed to its uttermost limits, that the initiation of new building schemes, and even the immediate completion of those already in hand, may be almost entirely stopped.

As the Committee itself remarks, one of the conclusions to be drawn from a consideration of the communications from the Treasury would appear to be that the Council should, so far as possible, restrict the execution of capital works which are in progress under contracts. The Committee further state that, although they do not feel in a position to submit a recommendation as to retarding or stopping works already proceeding, they have communicated to the spending Committees of the Council the purport of the Treasury letters, and asked them to ascertain what works under their direction can be retarded or postponed entirely without serious detriment.

Speaking on this report, Mr. T. Gautrey said the Council had some reason for complaining of the attitude of the Finance Committee. Apparently the Committee had already considered the desirableness of restricting expenditure, and had decided that it was not desirable to extend the Council's commitments. The Education Committee would have particular ground of complaint, as he understood £300,000 worth of work was already in hand, the tenders having been accepted and the work in various stages of progress. Surely the Finance Committee did not desire to stop buildings which were in course of erection, but that was the impression he gathered from the Committee's attitude on the whole matter. In his opinion each Committee should be asked separately to consider the question, instead of being peremptorily ordered to fall in with the views of the Treasury.

Sir George Goldie (Chairman of the Committee) said they had received several communications from the Treasury and had asked for further information on the matter. It was surely due to the Government that the Council should hold its hand until the Treasury had time to reply. A full report would then be presented, and in the light of that report the Council could decide what action should be taken.

The possibility of the building work of the Council being seriously interfered with was further emphasised later in the proceedings, when, in a discussion on the Finance Committee's report dealing with the annual estimates, it was mentioned by more than one member that a conceivable outcome of the suggested restriction of expenditure was the holding up of the new County Hall.

DEVON AND EXETER ARCHITECTURAL SOCIETY.

THE annual meeting of this Society, which embraces the counties of Devon and Cornwall, and is in alliance with the Royal Institute of British Architects, was held on Saturday, March 20, at the Central Hotel, Plymouth.

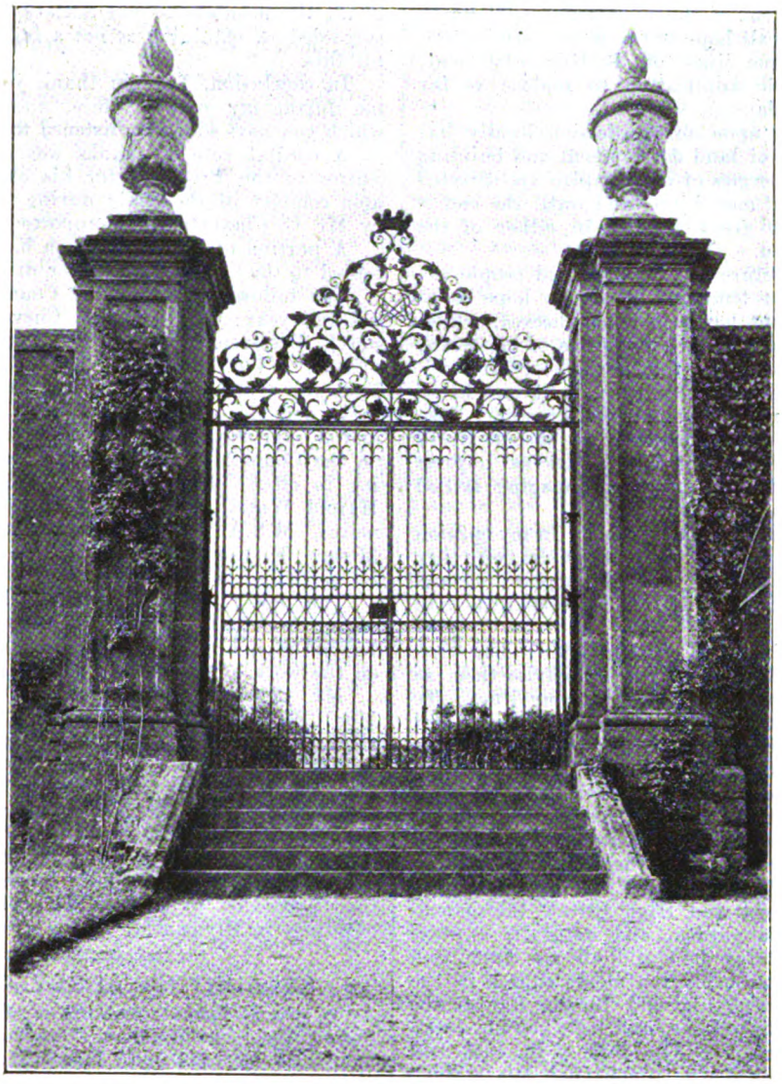
The chair was taken by the President, Mr. J. Archibald Lucas, F.R.I.B.A. (Exeter), and among those present were Messrs. C. Cheverton (Vice-President, Devonport), L. F. Tonar, J. Jerman, T. A. Andrews (Exeter), E. Coath Adams, A. S. Parker, B. P. Shires, A. C. A. Norman, J. S. Davis, H. Watts, R. A. Mill, C. H. L. Varcoe (Plymouth), and Allan J. Pinn (Hon. Secretary, Exeter).

Apologies for absence were received from Messrs. J. Crocker, C. Cole, J. M. Pinn, S. Dobell, C. King, M. A. Bazeley, W. A. Vercoe, S. Hill, E. F. Hooper, N. G. Bridgman, and A. J. Adams.

The annual report was presented by the Hon. Secretary. This, together with the balance sheet, was received and adopted.

The report states that the membership has been well maintained, and after removing one by resignation the roll of members now stands at seventy-eight, as against seventy-six last year. The Society has to regret the decease of Mr. Arnold Thorne, a Past-President of the Society. Since the last annual meeting fourteen Council and four general meetings have been held, and several matters of importance have been under discussion. At the last annual meeting a motion was brought forward "That the rules of the Society be so altered as to permit of the appointment of two or more Vice-Presidents and one extra Associate member on the Council, and be referred to the Council." A sub-committee drew up an amended set of clauses. The summer excursion, which had been arranged, was unfortunately considered advisable to abandon on account of the crisis of the present war, but the Council hope to continue this annual event during the present year. The Council again regret there has been no response from the younger members in connection with the London Architectural Association, whereby students of this Society can join the School of Design; therefore the Guinea Book Prize offered by the Society to the competitor whose design is placed first has not been awarded. No drawings were submitted for the Measured Drawings Prize for 1914; therefore the prize of two guineas in books offered by the Society has not been awarded. The Hon. Secretary will be glad to receive the names of any books that members may think desirable to add to the Library, and will be pleased to bring them before the Council for their consideration. The attention of members is called to the opportunity afforded candidates to sit at Exeter for the preliminary and intermediate examinations of the Royal Institute of British Architects. The sum of three guineas has been paid to the Architects' Benevolent Fund. The Council regret that no papers have been read during the past session on account of the present war. As far as at present known, the following members of the Society are now serving with the Colours during the present war: Captain W. J. T. Carder, 5th Devons (Territorial); Captain F. Earle, Royal Engineers; Captain J. C. Southcombe, 6th Devons (Territorial); Lieut. W. H. May, National Reserve; Second-Lieut. B. W. S. S. Baily, Wiltshire Regiment; Lieut. C. R. Rickeard, Garrison Artillery; Privates A. R. Muddell, 2nd P.S. Battalion Royal Fusiliers; E. E. J. Henderson, 2nd P.S. Battalion Royal Fusiliers; C. A. Jeffery, 4th Devon General Service Battalion; J. S. B. Ward, 4th Battalion Gordon Highlanders (Territorial); H. Thorne, 6th Devons (Territorial); J. D. Coleridge, Royal Naval Volunteer Reserve; P. H. Coleridge, Inns of Court O.T.C.; Sergeant C. H. Phillips, 105th Saskastoon Fusiliers, Canadian Expeditionary Force; Sapper W. W. Hitchins, Royal Engineers. The following are serving in the Volunteer Training Corps: Messrs. J. A. Lucas, P. Morris, A. J. Pinn, L. F. Tonar, J. H. Shearer, C. Cheverton, E. W. Lister, A. C. A. Norman, R. A. Mill, and J. C. Smythe; Devon Voluntary Aid Organisation: Messrs. Harbottle Reed, A. R. Holman, B. H. Palmer, and E. H. Palmer.

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WROUGHT-IRON GATES AT STONELEIGH ABBEY, WARWICKSHIRE.

The President referred to the death of Mr. R. H. Arthur, of Plymouth, who was for many years a member of the Society, and a past member of the Council.

Mr. J. A. Lucas then delivered his address:—

Gentlemen,—For the first time it is my privilege and pleasure to address you at this annual general meeting—the twenty-eighth year of the institution of our Society—twenty-eight years, I venture to say, of quiet, useful, intelligent work on the part of a body of men whose efforts for the well-being and advancement of their profession in the counties of Devon and Cornwall have not been without good results.

The results have been the settlement of many knotty questions and the promotion of a better understanding amongst the architectural profession of the province.

I wish to thank the Society for having honoured me by election to the position I have occupied during the past year. The work has been a very pleasant one. All have loyally supported me during my year of office, and especially my thanks are due to our Honorary Secretary, Mr. Allan J. Pinn, an old schoolmate of mine, whose work and energy on behalf of us all can only be known in full to your President.

During the year various matters have been brought before the Council, some of which have required most delicate handling, but I am glad to say that although at times very plain talking has taken place, matters in the end have all ended happily.

There has been no annual outing or dinner during the year, a fact I regret very much, but with the cloud of war over us in the autumn of last year it was considered better not to hold the former, whilst the latter will, I hope, be revived at no distant date.

The Royal Institute of British Architects very kindly honoured me by election to the Architects' War Committee, but up to the present the duties in the province of our Society have been exceedingly light.

The subject of registration appears to be a dead letter for the time being, but I sincerely hope that the Royal Institute wil take some firm stand on the matter. I have now been in practice over twenty years, and during the whole of that time it has been in the air without any definite result.

The one great thing, of course, in the minds of all of us is the war and the effect of that great war upon the well-being of our profession. Let us think of Belgium and the North of France first—Louvain, Malines, Tirlemont, Ypres, and Rheims—the splendid monuments of past ages ruthlessly destroyed, town halls, cathedrals, and churches laid in ruins, and for no purposes other than for frightfulness and terrorism. No restoration in the world can replace the damage done or restore to these wonderful specimens of mediæval architecture and art their beautiful character and antiquity. Many of those present to-day have doubtless visited the majority of the places I have named. Louvain, a town of slightly smaller size than Exeter, boasting a line of history dating back to the ninth century, with a magnificent town hall, church, and university all in heaps; Malines, the ecclesiastical capital of Belgium, with its charming cathedral of St. Rombaut ruined; Tirlemont, a small city almost levelled to the ground; Ypres, with its thirteenth-century Cloth Hall, which alone covers over an acre of ground, burnt out, and the cathedral of St. Martin served likewise. Last, but by no means least, Rheims, the "Civitas Remorum" of Cæsar, captured by the vandals under Attila in 406, and history partly repeating itself now. Its cathedral of Notre Dame—the Westminster Abbey of France since the twelfth century—ruined. Such has been a few of the effects abroad. Do we understand the loss to our professional brethren in the parts I have men-

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tioned of those at present afflicted countries? Can we imagine a similar treatment of the historical buildings in our own country? Let us all hope for a speedy termination of this holocaust on proper lines of British settlement, together with an energetic application to replace as far as possible this ruthless damage.

The effect of the war upon our profession locally has been the partial stoppage of land development and building operations. The whole energies of our Empire are directed towards the attainment of one object, and until the end is in sight there can be no great activity in either of the departments I have named.

Architects and architecture are luxuries and people are partly giving up luxuries temporarily, let us hope so at least, but land development has been much checked, whilst building is being hampered by the high price of materials, difficulty of obtaining them, and the shortage of labour.

But now in this time of leisure let us put our house in order, when we have more time to think of others than only of ourselves. Let us press forward registration. Every profession seems protected except ours. Let us impress upon all public bodies the advantage of engaging skilled architects for purely architectural works.

Architects as individuals are too retiring. In my opinion they should endeavour to get on every local public body they can and make themselves heard. Take town planning and housing. Who have a better right to be consulted than practising architects?

I will refer to one instance of the latter. The Corporation of Exeter called in an expert to advise them as to the development of Exeter on town-planning lines. To my mind all that is ancient and associated with the history of an old city like Exeter should be preserved and as far as possible improved, always bearing in mind to maintain its character. This production did not deal at all with the undeveloped land outside the city, but struck right at the heart of it. It proposed a grand square opposite the Museum in Queen Street with a Carnegie library, a town hall where the Higher Market stands, an art gallery at the corner of Queen Street and High Street, the detachment of the Guildhall, a garden, and naturally a playground for children adjoining the Guildhall, the demolition of St. Pancras Church, probably the oldest church in the city, a production something like Old Temple Bar at the High Street end of Martin's Lane, and last, but not least, a new street from the front of the Guildhall to the cathedral yard. The scheme is very dormant now, but gets a short awakening at times. Apart from its cost, to embark upon such an idea would detract from all the beauty of our present High Street, and whilst it may be fit for a modern town, is out of all question for the historical city of Exeter. I am glad to say your Council have appointed a committee to watch this scheme from our point of view.

At the present time sales of property are not taking place very rapidly, but despite all these at present unfavourable times, I feel convinced that when peace comes—and it is said it is likely to come sooner than many of us imagine—there is going to be a great trade boom in which we shall get our share.

Another point upon which I wish to say a few words is the training of pupils. A lad comes in your office for, say, three years; he learns in the office the general routine of the architectural profession, geometrical drawing, tracing, inviting tenders, specification work, superintendence of works accounts, and perhaps quantities, but he does not get the training in drawing he ought to get. To my mind freehand, outline from the cast, outline from the life and clay modelling are the subjects in which a budding architect should become proficient. The studies of an architect's pupil do not end with his office work. They commence there, but should be continued in his spare time in the subjects I have named, together with the measuring and plotting of ancient work during his spare hours in the summer. His aim should be to pass the examination of the Royal Institute of British Architects, and thus become a junior leader in his profession.

In conclusion, I want to say a few words to some of the older members. I should like to see some of our best county architects exhibitors at the Royal Academy. I know some have been lucky enough to get their architectural drawings hung there, but it seems to me very few send up for the exhibition. Can we not remedy this in the future?

We are having an Art Exhibition at the Royal Albert Memorial towards the end of the year, and I have succeeded in inviting the committee to add an Architectural Section. Now, having gone so far, I rely on the support of all the members of our Society to see that what I have succeeded in obtaining is not a failure, and I rely on you for this.

In conclusion, I again thank you for your kindness to me during my year of office, and for the patience with which you have so kindly listened to this address.

A cordial vote of thanks was proposed by Mr. B. P. Shires to the President for his excellent address and the able conduct in the chair during the past year, seconded by Mr. C. Cheverton and supported by Mr. J. Jerman.

A portion of the rules which had been revised was presented to the meeting, and after discussion was adopted.

The following officers and Council were elected for the ensuing year: Mr. Charles Cheverton, M.S.A. (Devonport), President; Mr. L. F. Tonar, Licentiate R.I.B.A. (Exeter), Vice-President; Mr. S. Dobell (Exeter), Hon. Treasurer; Mr. Allan J. Pinn, A.R.I.B.A., Hon. Secretary; and Messrs. J. Crocker, F.R.I.B.A., C. Cole, M.S.A., and J. Jerman, F.R.I.B.A. (Exeter), to fill the vacancies on the Council of those retiring, as well as those remaining in office—viz.: Messrs. A. S. Parker, F.R.I.B.A., Harold Watts, A.R.I.B.A. (Plymouth), and A. J. Cornelius, M.S.A. (Truro), and the two Past-Presidents, Messrs. E. Coath Adams, M.S.A. (Plymouth) and J. A. Lucas, F.R.I.B.A. (Exeter).

The newly elected President, Mr. C. Cheverton, in taking the chair, thanked the members for the honour conferred upon him, and said he would endeavour to carry on the work of the Society as had been done in the past.

Mr. Cheverton proposed a hearty vote of thanks to the Hon. Secretary, Hon. Treasurer, and Hon. Auditor for their services during the past year, and bore testimony to the efficient manner in which they had carried out the business of the Society, which was supported by Mr. J. A. Lucas and Mr. J. Jerman. This was carried by acclamation and suitably replied to by the Hon. Secretary, Mr. Allan J. Pinn, and the Hon. Auditor, Mr. L. F. Tonar.

Subsequently the members lunched together, after which they proceeded to inspect some of the old houses and buildings in Plymouth.

ST. AUSTIN'S ABBEY, CANTERBURY.

AT a special general meeting of the Kent Archæological Society, held at Maidstone Museum, the following account by Sir W. H. St. John Hope, M.A., was read as to the discoveries lately made in the church of St. Austin's Abbey, Canterbury:—

It will probably interest the members of the Kent Archæological Society to hear something about the remarkable discoveries that have lately been made at Canterbury in the church of St. Austin's Abbey. Some months ago it was thought advisable to remove the layer of earth which marked the level of the monks' quire at the Suppression, and to excavate beneath it for traces of earlier buildings. The result was quite unexpected, for there were gradually disclosed the foundations or lower parts of the huge piers, and part of the encircling wall of the surrounding ambulatory, of a large circular structure. It underlay the area of the crossing and of the first three bays of the nave, and extended north and south into the aisles and transepts. Further investigation showed that the principal area was over 24 feet in diameter, that it was surrounded by eight piers nearly 9 feet through for a continuous circular arcade, and that the ambulatory wall was eight-sided externally. The total width was about 70 feet.

Since this building was everywhere overlaid by the work of Abbot Scotland, who built the crypt, presbytery, tower, transepts, and quire between 1073 and 1087, it is obviously of earlier date, and there are both historical and architectural reasons for assuming it to be "the new work" begun by Abbot Wulfric between 1056 and his death in 1059. We are told that he raised the walls and constructed piers and arches, and that "Kent rejoiced in the new work, although the inexperience of the builders made it unsuitable for a monastic habitation." It was for this reason, perhaps, that Abbot Scotland pulled down the unfinished structure, which seems to have been built upon the site of the former presbytery.

In any case the raising of such a work in the eleventh century, while St. Edward was King of England, is a very exceptional circumstance, and when its remains have been uncovered a little further, measures can safely be taken for the permanent exposure of one of the most remarkable ecclesiastical buildings in England.

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But the recovery of the place of Abbot Wulfric's round tower, as we may perhaps call it, does not exhaust the recent discoveries. It has for a long time been an article of belief with some of us that whenever the opportunity should present itself there would be found under the floor level of the Norman nave the remains of the very church which was begun for St. Austin himself in the year 598 by Ethelbert, King of Kent, and hallowed in 613.

Now there has been laid open for some months in the north aisle of the nave a tangled mass of stonework and foundations from which it was impossible to evolve order or frame reasonable theories without a more extended excavation round them. These remains had not been found by accident, but searched for at this particular spot, because the historians of the Abbey were emphatic in stating that this eastern part of the aisle marked the site of the porticus in which St. Austin and his five immediate successors had been buried. We have also a minute account, by the twelfth-century chronicler Goscelin, of the translation of their remains to Scotland's new presbytery in 1091, and a special chapter on "the order in which the bodies of the saints were arranged," written, he tells us, because "it is a kindness to posterity to let them hear, what is no longer to be seen, in what position the saints formerly rested here."

Within the last few weeks it has been possible to extend the earlier operations westwards and to clear up one puzzle, and with most surprising results, for there are now actually to be seen the veritable remains of the despoiled tombs of Archbishops Laurence, Mellitus, and Justus, with portions of the original flooring, and part of what may be the altar of St. Gregory that stood between the tombs of Laurence and Austin. There is also the empty grave in which the body of St. Mildred was laid by Wulfric when he destroyed the presbytery. The tombs of the three Archbishops lie in a row, as described by Goscelin, against the base of a thin outer wall built of Roman bricks and plastered within and without.

Whether there are any corresponding remains of the tombs of St. Austin and of Deusdedit and Honorius, which lay to the south, has yet to be seen. At present their sites are overlaid by the huge sleeper wall, 10 feet wide, of the Norman arcades, but it may be possible, without actually destroying this, to burrow underneath. And meanwhile explorations are now in progress further south.

In any case there seems to be no reasonable doubt that we have established the place of the actual porticus or aisle in which Austin and his brethren were originally buried, and that the thin outer wall belonged to King Ethelbert's church, which ought therefore to have been of basilican plan.

To the east of the porticus are the beginnings of a much later and wider apse that evidently belonged to some extension of the building at this point. Perhaps in the tenth century, for there is record of a second dedication of the church by Archbishop Dunstan in 978, a statement that implies a rebuilding or enlargement.

Here we must stop for the present, until further finds shall have been made. But meanwhile we may surely congratulate ourselves that a discovery that takes us straight back to the very beginning of the English Church has been reserved to our own time, and there is no saying at present to what it may lead.

SMOKE ABOLITION AND MECHANICAL STOKERS.

In all large buildings, whether designed for industrial or other purposes, there is a remote, obscure, and sometimes almost inaccessible portion where are carried on those processes of which only the final result in health, comfort, and convenience is generally seen. This inconspicuous but vitally necessary part is the boiler-house. Here the lighting and heating arrangements have their source; here it is that steam, the prime mover, is produced, on which depends the generating of the electric current required for lighting, heating, ventilating, and power purposes.

Its triumphs are not visible to the vulgar gaze, as are the external beauties or the decorative effects of impressive architecture. They are, however, felt and experienced, and more than one building has suffered severely in its reputation by reason of some inconvenient or discomforting conditions, the real seat of which is often in the boiler-house equipment.

We believe it is a fact that many architects are often in a position to cover by their complete specification the detailed equipment of this portion of the building, but in the absence of much requisite technical information there is sometimes a temptation to leave this part of the work to someone else to see through. Especially is this the case with that most interesting detail of the modern boiler-house, the mechanical stoker.

The superiority of mechanical stoking over hand-firing has in recent years been very conclusively established. Hand-firing, even with the best men available, is a cumbersome and costly method, and even with high-quality coal fails to attain complete and efficient combustion and consequent smokelessness, whereas a mechanical stoker ensures a clear, strong fire and an absolutely smokeless chimney. The latter is a point of supreme importance, and it is a matter for congratulation that smokelessness can be attained not only without any sacrifice, but with a greatly enhanced degree of efficiency and economy. The making-up and keeping-in of the fires necessitates, in the case of hand-firing, frequent opening and shutting of the furnace doors and consequent irregularity in the air supply, while there can be no nicety of discrimination in supplying the fuel only to such parts of the fire as need it. Serious fluctuations in the furnace temperature are thus caused and result in lessening the output of steam, and inflicting on the boiler plates the maximum of strain, by expansion and contraction, through sudden inrushes of cold air. The life of the boiler is thus considerably shortened, and heavy repair or renewal expenses are incurred.

These troubles do not obtain with machine-firing, as the coal is automatically distributed by the mechanical stokers without opening the furnace doors, and distribution of the fuel is made only to such parts of the fire as actually require it. A uniformly high furnace temperature is consequently maintained, with a correspondingly increased evaporation, and the boiler plates being subject to a minimum of strain a great saving in wear and tear is effected and the boiler life prolonged.

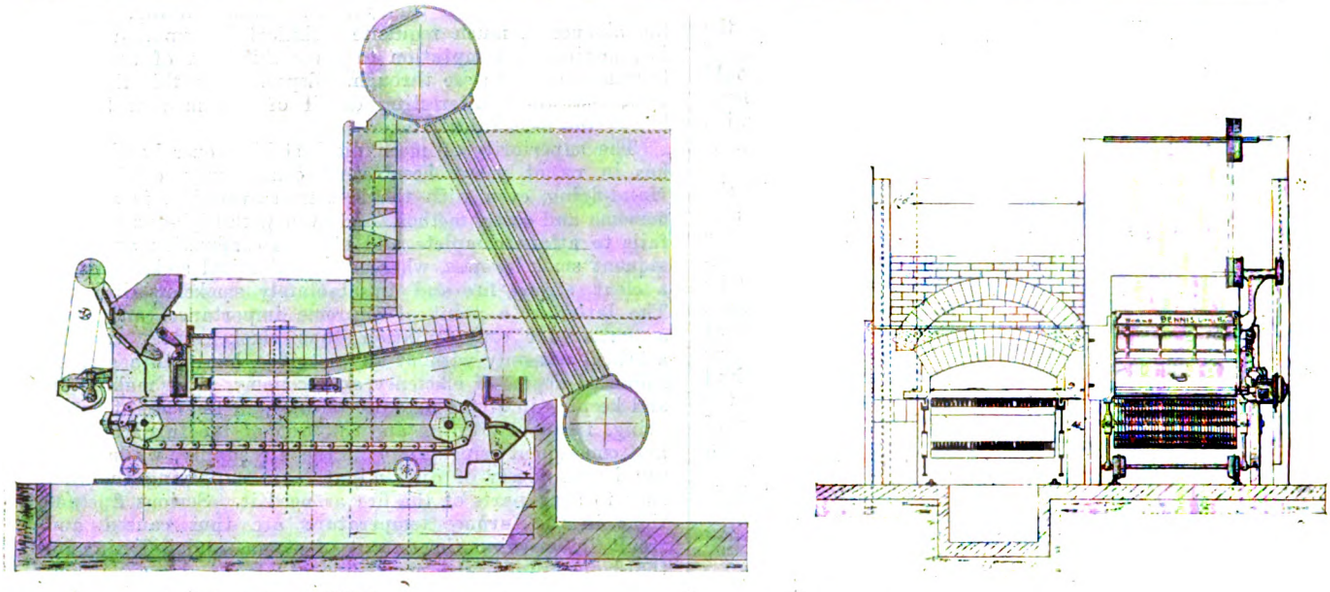
It may be useful at this point to give a brief description of the apparatus. The two chief types of mechanical stokers are the coking and sprinkling stokers, the relative advantages being largely dependent upon the class of fuel to be burnt. The essential difference between them is that in coking stokers the combustion of the volatile hydrocarbons contained in the fuel is effected at a different portion of the grate surface from the combustion of the fixed carbon or coke. An independent air supply is sometimes provided for the combustion of each portion of the fuel. In coking stokers the fuel is usually fed on to the front of a moving grate, the volatile portion being expelled and burnt near the front, while the fixed portion is burnt during its carriage towards the back of the fire by the movement of the grate surface. The incombustible portion of the fuel (ash) is dropped into a chamber behind the grate. The movement of the grate surface may be reciprocating or continuous.

The difference between the sprinkling and coking stokers is still more clearly indicated by the description given below.

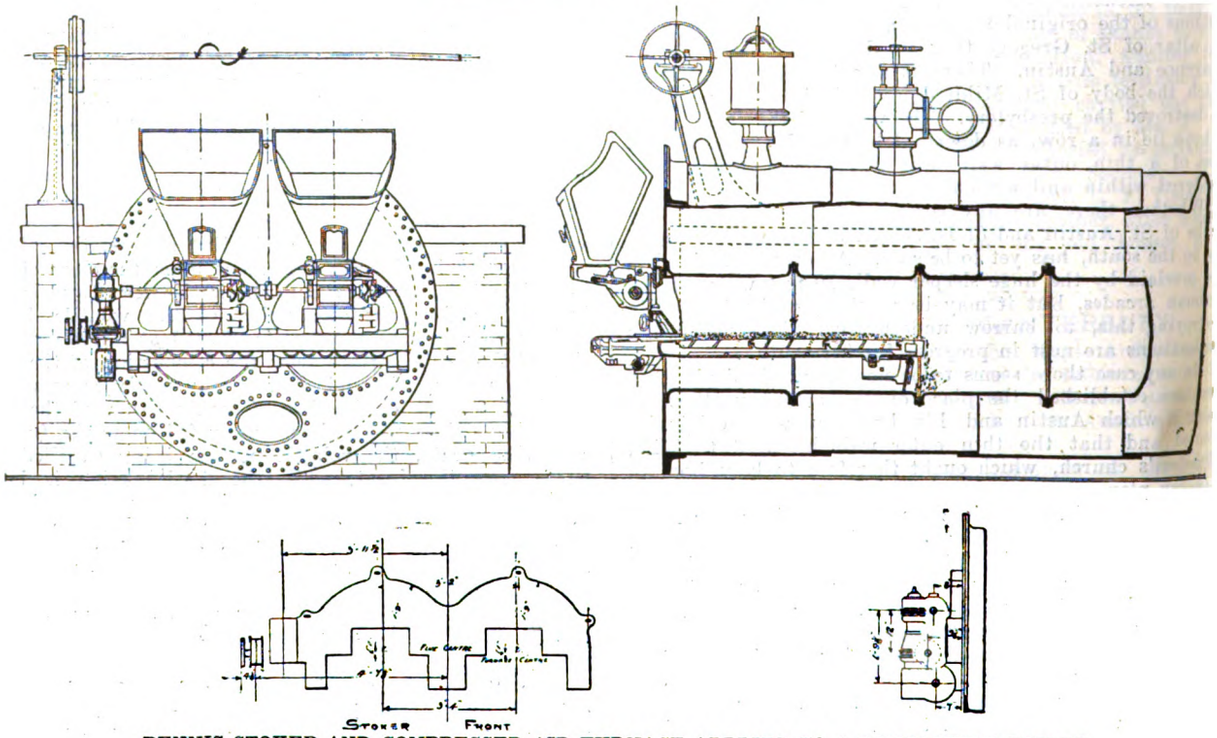
The "Bennis" sprinkler stoker has for its prime object the mending of the fire when, where, and as it is required to be mended. It accomplishes this with closed fire doors, so that high evaporation is equably maintained and damage to the boiler plates by the admission of sudden gusts of cold air is avoided. The mechanism of the sprinkler stoker consists of the grate, fire-bars, and the shovel arm or sprinkler, which feeds four different parts of the fire surface alternately. The coal is delivered into a hopper by means of measuring shoots, where so desired, and is uniformly distributed on to the fire, which is at all times clear and bright, the gases being entirely consumed in the furnace where they are generated. The stoker is capable of burning without smoke low-grade small coal, slack, and coke breeze, colliery rubbish, and fuel which it is impossible to hand-fire.

In the "Bennis" chain grate stoker the distinctive feature is the new type of link, which possesses many advantages over the older types. Each individual link is halved in the width at its point of junction with the succeeding link, the two half-widths together making the thickness at this part of the link equal to that of the remaining portion of the link; the upper surface of the grate, therefore, remains continuous across the junction. The link is grooved depth-wise at regular intervals, the grooves serving to regulate the air space. Special points claimed by the makers for this type of stoker are: (1) Continuous grate surface; (2) equable distribution of the air

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ARRANGEMENT OF BENNIS CHAIN GRATE STOKER
APPLIED TO WATER TUBE BOILER.



BENNIS STOKER AND COMPRESSED AIR FURNACE APPLIED TO A LANCASHIRE BOILER.

at such points of the fire as require it; (3) the provision of more air space without the widening of the actual air spaces; (4) the abolition of the troublesome dumping bar and the substitution of air seals; (5) such an arrangement of the stoker hoppers that ready access to the tubes is afforded; (6) the satisfactory combustion of fine slack fuels; (7) side air seals which protect the furnace walls.

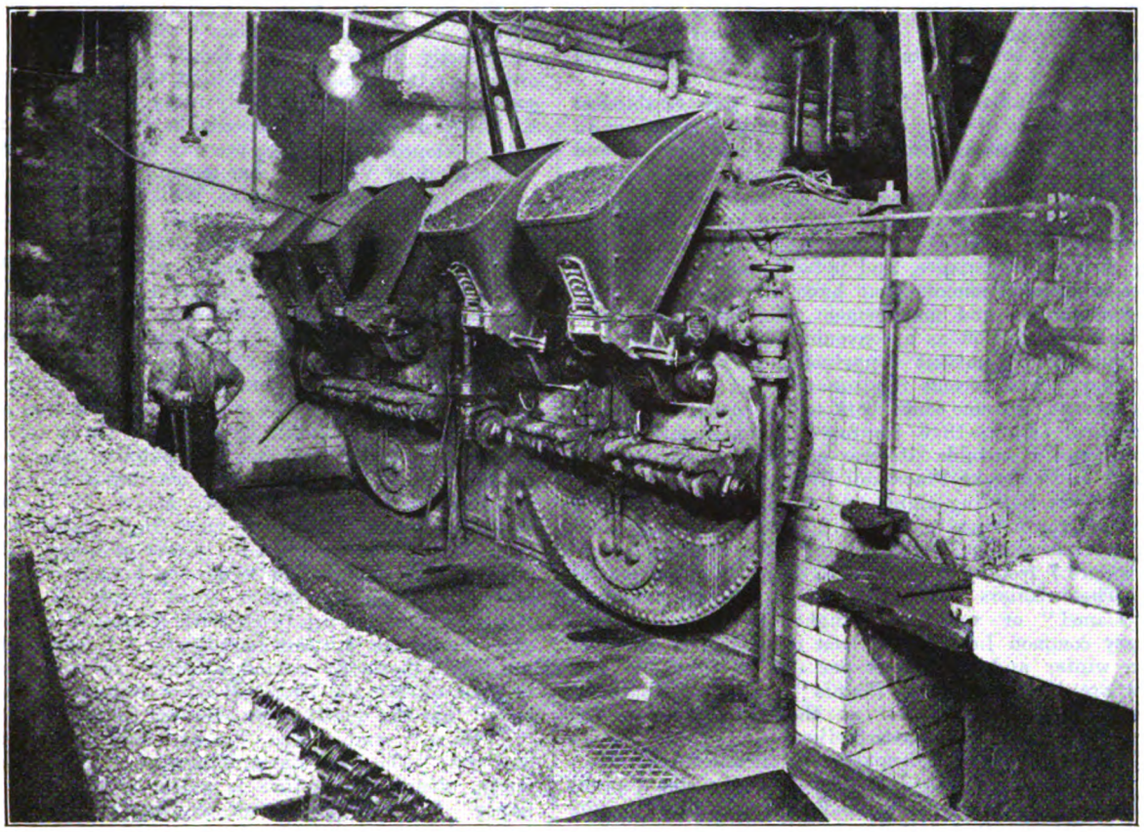
The "Bennis" coking stoker is constructed to give a very high evaporative boiler duty and greater economical efficiency than previous types, owing to the rapid rate at which the fuel is ignited and coked. Fuel is fed through feed boxes over the fire doors, which are air-cooled, on to supplementary coking bars, and thence to the main compressed air furnace bars, each with its independent air supply.

The coking stoker itself consists of a machine supplied with hoppers into which the fuel is fed. Beneath the hoppers are duplicate feed boxes with reciprocating feeder rams which feed the coal into the furnace intermittently. Between the feed boxes is a sight hole, a comparatively large orifice, by looking through which it is easily possible at any time to ascertain the state of the fire.

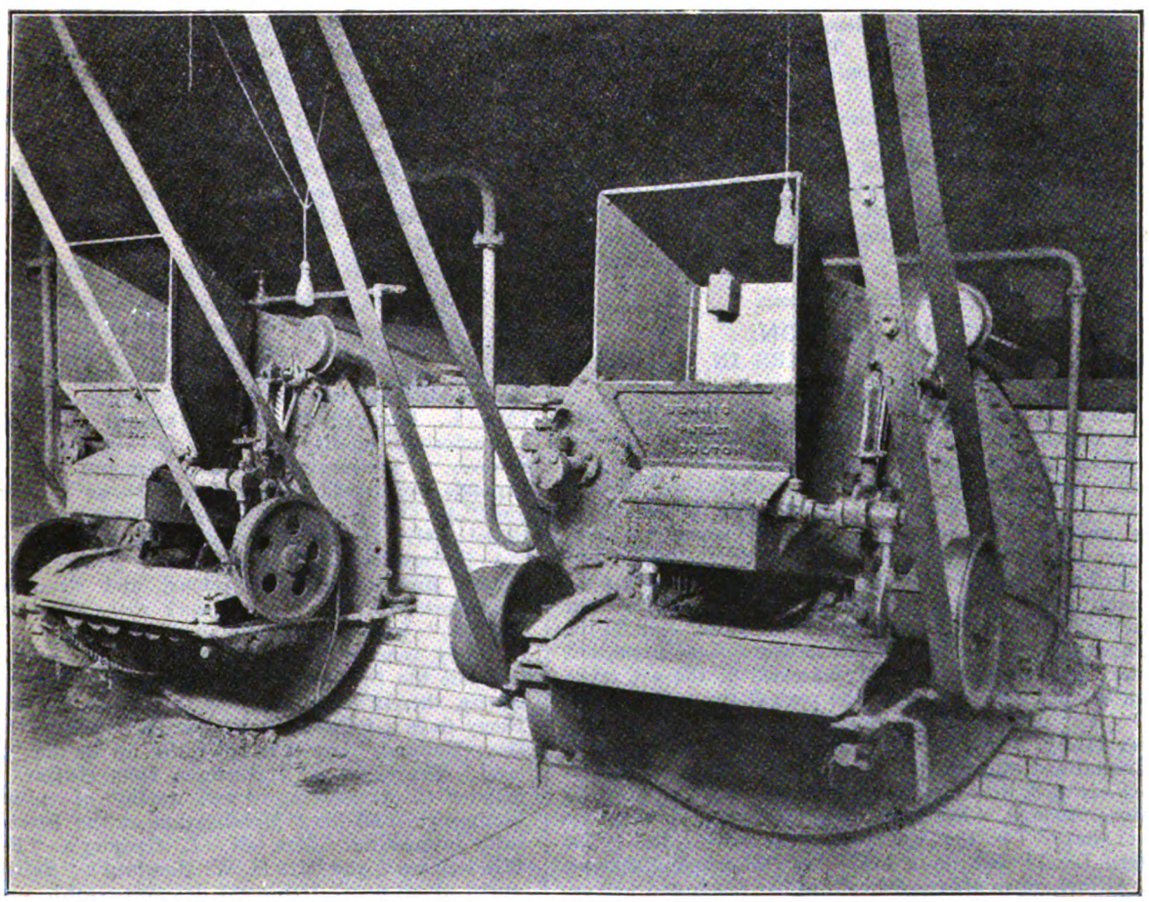
Among the distinctive features claimed for this stoker are: (1) The power of rapidly lighting back which carries with it the power of feeding a much larger amount of fuel on to the furnace and getting it burnt; (2) a higher and more even furnace temperature induced by the scrubbing of the coke by the air blown into the fire through the very fine air spaces of the compressed air furnace bars; (3) maximum flexibility attained by the power of controlling the air supply to the compressed air furnace bars and the adjustment of the damper of boiler—a combination adequate to control the rate of combustion; (4) combustion without smoke, grits, or dust, the compressed air furnace cleaning into the ashpit which is a closed chamber; (5) simple and easy manipulation, there being but two adjustments for the fireman to make—one that determines the rate of feed by turning a nut, and the other that regulates the air feed by means of a valve; (6) low cost of upkeep, the parts being few and the feed motion simple; (7) ventilated dead plate bars which keep the fire at an accurately calculated distance from the boiler front, thereby obviating any injury to the furnace front by parts becoming red hot.

A large number of public institutions have been fitted with one or other of the stoker types mentioned above, a good example being that of the Alder Hey Hospital, an

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ROYAL INFIRMARY, LIVERPOOL.



DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.

institution used for Poor Law patients under the West Derby Union, of which Mr. Charles H. Lancaster, F.S.I., was the architect. "Bennis" coking stokers are here fitted to three Lancashire boilers, each 30 feet by 8 feet. The hospital is one of the most up to date in this country, with accommodation for 1,000 beds exclusive of staff. The facilities offered for the design and the installation of the engineering section were admirably met by excellent subways throughout the buildings, giving an average space of 5 feet by 6 feet in the clear, in which all the piping mains were carried.

Another hospital installation of some interest is the "David-Lewis" Northern Hospital, Liverpool, for which the architects were Messrs. Pennington & Son and C. W.

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Harvey, where two Cornish boilers are installed fitted with "Bennis" coking stokers and compressed-air furnaces. The chimney at this hospital is the best in Liverpool from a smoke point of view.

The Royal Infirmary, Liverpool, was first established in 1745 on the site of what is now St. George's Hall, but in 1820 the present site in Brownlow Street was secured, and the building opened in 1824. Numerous improvements and additions have been made to this important institution, and the present building was opened by the late Duke of Clarence, the total cost having been £181,000. After twenty years of experience, and notwithstanding the great changes and improvements that have taken place in hospital construction and management, the infirmary maintains its high position as a convenient, well-arranged hospital, but the out-patient department, to repeat the old phraseology, "had become inadequate." It had therefore been apparent for some time, both to the committee and to the medical staff, that improved accommodation was essential, and a suitable site was acquired adjacent to the infirmary in Pembroke Place and Brownlow Street.

In the new building ample and suitable accommodation is provided for medical and surgical patients.

As a prime source for the heating there are two Lancashire boilers 7 feet by 26 feet, with 2-feet 6-inch diameter flues. These boilers were fitted with "Bennis" stokers and "Camel" or natural draught furnaces in 1893. Ordinary common Lancashire slack is used—five tons per day in winter and three tons per day in summer. The stokers are driven by the "Bennis" patent Westminster engine, which was installed at the same time as the stokers, and is still giving satisfaction.

At the well-known hydropathic establishment at Matlock, founded by the late John Smedley, the steam plant installed consists of two double-flue Lancashire boilers 30 feet by 8 feet, fitted with the usual mountings and four "Bennis" patent sprinkler stokers and camel or natural draught furnaces in 1893. The furnaces were converted into compressed-air furnaces in 1902. The grate surface is about 41 square feet. The boilers work at a pressure of 65 to 70 lb. per square inch. The feed is generally by injector through a Sykes economiser, or as an alternative by Cameron pump.

Space does not permit of our giving a more detailed description, but enough has been said to give the profession some idea of the value of the plant supplied by Messrs. Edward Bennis & Co., Ltd., who will no doubt be pleased to give any further information, both descriptive of the buildings and technical of the plant and machinery, on application. Their address is Little Hulton, Bolton. Lancashire.

ART IN LONDON.

ROYAL SOCIETY OF PAINTERS IN WATER COLOURS.

OF the many art exhibitions which recur at regular intervals in the Metropolis the Water Colour Society provides a combination of qualities, not only second to none, but, as we think, superior to all. It is but natural that any critical estimate of a polyhuman show should find works to be ranked under the various denominations of excellent, good, ordinary, poor, and extraordinary; but at the Pall Mall East Galleries in these summer and winter collections we find habitually a greater proportion of what pleases than is customarily observable in similar exhibitions. Nor do the same artists earn invariably a like measure of criticism, but whether this be due to the current mood of the art critic or to a variation of quality on the part of the artist, *quien sabe?* Let us regard, for example, the work of Mr. C. Napier Hemy, R.A., which hitherto has always met with our unqualified approval; in the present exhibition we regarded his work with less obvious pleasure than on previous occasions, though "Pretty Sailing" is stamped with his cachet; but "On the Rocks—Low Water" and "The Western Land" are on a lower level of accomplishment. Mrs. Allingham is always delicate in her touch and sympathetic in her mood, and of her four exhibits we give preference to "A Pergola of Roses" and "A Wiltshire Cottage." Mr. Albert Goodwin contributes five canvases, all good. "The Citadel, Cairo," is more than merely good, and "London from the Tower Bridge" is one of the gems displayed to view; the rendering conveys all that charming mystery and mystical charm of our Metropolis which every true Londoner loves so fully.

We can never arouse in our own person any enthusiasm for the work of Mr. S. J. Lamorna Birch. "The Weir at Skerton" and "Sleeping Seas" are better than what we customarily notice, but we should even so rank them as ordinary; in "The View," whilst the atmospheric effect is good, the clouds are distinctly rocky in appearance. Miss E. Fortescue-Brickdale possesses the quality of imagination well developed, but we reserve our feelings of pleasure for "The Birth of Vanity"; her technique is of a high quality in any case. Mr. W. Eyre Walker would have shown sufficient had he merely exhibited "Evening" and "A North Devon Valley," the former limned in a not too modern style of art, such as we associate with the early Victorian school; it is rhythmical to a degree. Mr. Reginald Barratt is consistently good, his "Sunrise, Venice," being one of the best works exhibited. Throughout he knows how to convey the Italian environment *à merveille.* We cannot succeed in visualising scenes to accord with the perception of Mr. Sargent, R.A.; we always regard art as something to be expressed, not taken for granted; nor is art in nature made up of insistent shreds and patches, but is a merged totality which it is difficult, if not impossible, to analyse. Mr. Sargent, however, is not so. Mr. T. M. Rooke, besides other work, has a couple of views in Durham which rank high; he not only evinces his power of happy selection of view, but also knows how to develop his subject to the full. Mr. W. T. Wood suffers from excess of mannerism. "Silence" is not art (even with a small "a"), but this same mannerism answers happily for "London, 1914," and provides a distinctly notable picture. We must pay regard to some of Mr. R. Thorne-Waite's contributions. "Salisbury" has the qualities we observed in Mr. Eyre Walker's "Evening," and "The Sussex Downs" is pleasantly realistic; "The Duck Farm, Ringwood," also makes a pretty study, where the texture is aided by the surface of the paper. Mr. Henshall shows excellent work in "The Lord be thankit" and "Golden Youth." He possesses the Dutch faculty of decorating a simple construction. Sir Ernest Waterlow, R.A., yields to no one in energy, and there is a quality of Art in his productions which calls for, even if it does not arrest, attention. The President (Mr. Alfred Parsons, R.A.) is not a distinguished exhibitor. We must record our continued appreciation of Mr. Charles Gregory's productions, even though they are not so notable as some hitherto observed, and Mr. E. Lawrence Bulleid is a successor to Sir L. Alma-Tadema, and not unworthy. We have by no means exhausted the good work on exhibition, though we cannot find space to mention further exhibits, saving Miss K. Turner's "Pink and White Peonies" which deserves high praise.

OLD DUDLEY ART SOCIETY.

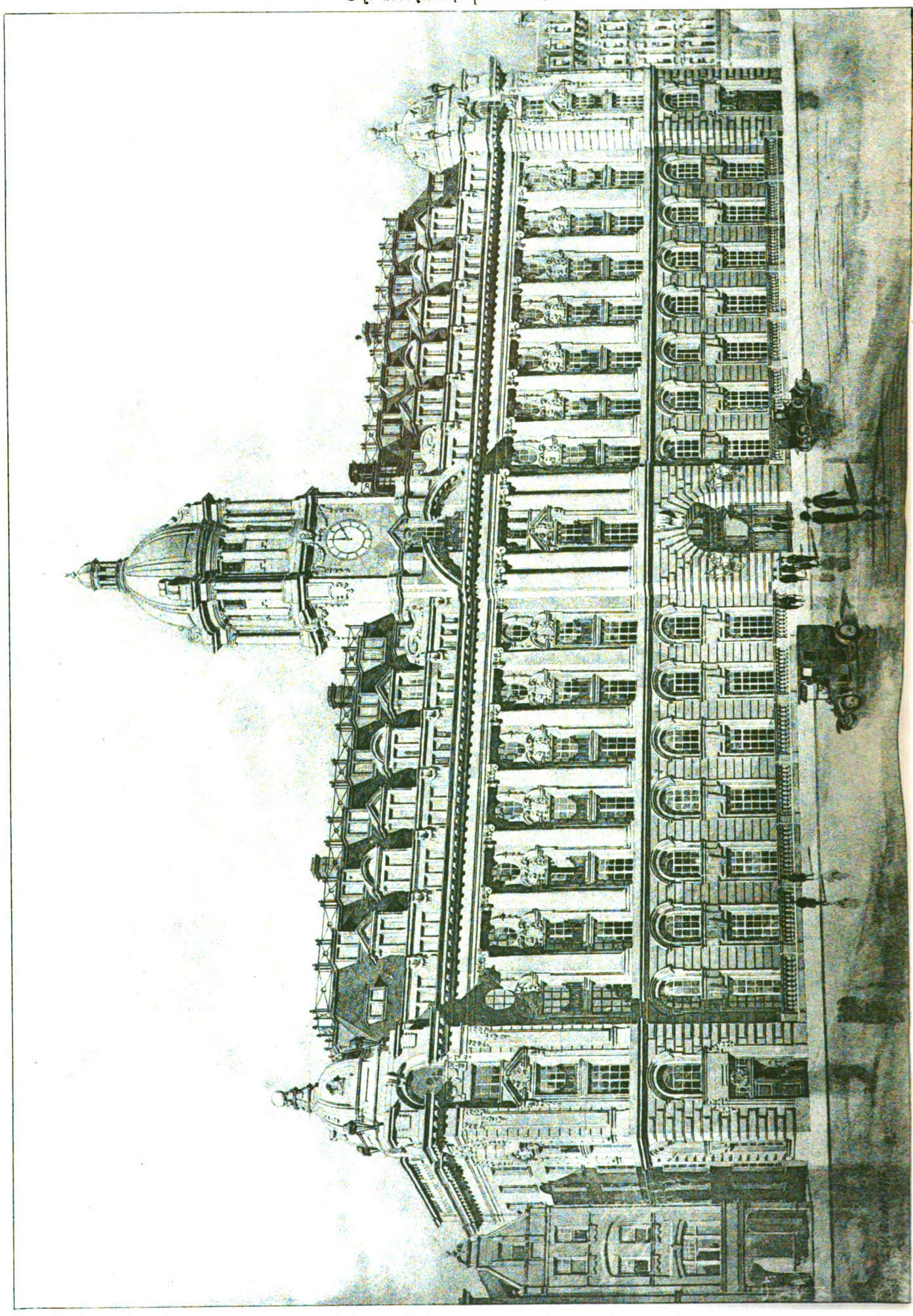
AT Mill Street, Conduit Street, this well-known Society has organised a special War Fund Exhibition, whereof 50 per cent. of the gross sales will be given to the St. John's Ambulance; under existing conditions, this fact lends additional interest to the collection. The President (Mr. L. Burleigh Bruhl) has several exhibits, and his characteristic virility of touch is apparent; sometimes, however, it is overweighted with pigment. Mr. H. Terry expands over rustic portraiture, such as "Naval News" and "An Old Waggoner," wherein he has found a typical model. Mr. Herbert Whewell's art is worthy of note in "A Devonshire Lane" and "Near Nice"; he is in no respect finnicky—breadth, colour, and strength are his characteristics; contrast his work with Miss Dell's "Pet Rabbits," with its individualised detailing, though we willingly concede the prettiness of the colouring, but "Where the Bluebells Grow" is charming, the colours and masses therein merging without confusion. Mr. Napier Hemy finds a follower in Frances E. Nesbitt's "A Stormy Day, Holland," but it is not quite up to the "master's" level. The sketch of "Southsea from Haslar," by Commander C. A. Severn, is well worthy of notice for its luminosity, and his "Mobilisation of the Fleet" is topically interesting. Mrs. M. I. Gregory's "Evening on Windermere" and Mr. E. W. Hereford's "Salisbury" are works whose poetic treatment deserves record.

Mr. Robert Morley's "A Suspicious Character" and other studies evince artistic sympathy with the subjects; unfortunately this quality cannot be predicated in the case of Mrs. Capel Cure's "The Gardens, Murthly," nor can Miss Eleanor Brace be congratulated upon "Roses" (94) and "Quinces," for we bear in mind that, whilst many artists can depict vegetable nature, an acute note of simpatia is very requisite in order to do adequate justice. In "Cremia, Lake Como," and "Storm Effect, Lake Orta,"

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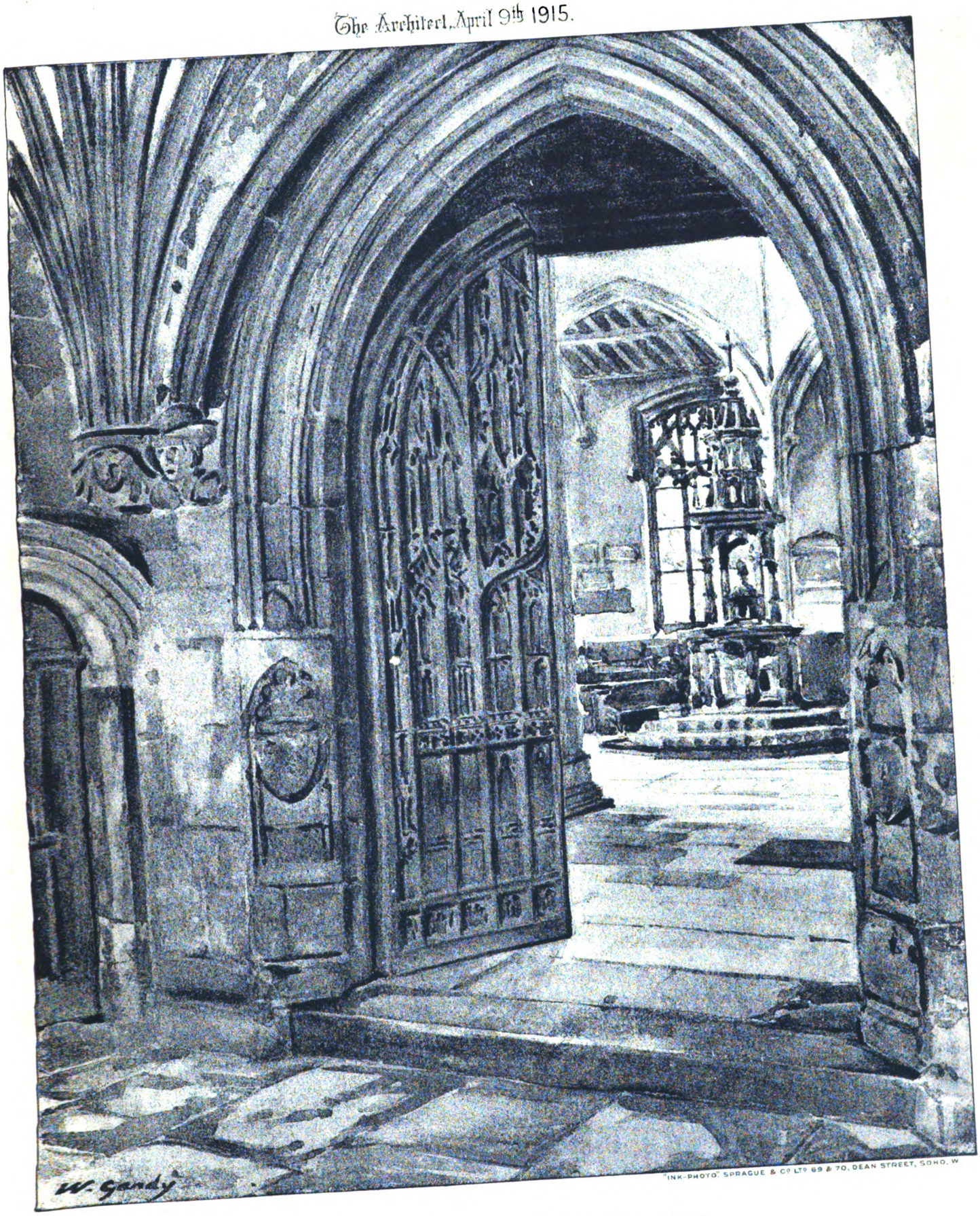
NEW SOUTH WING FROM THE PLAYGROUND.

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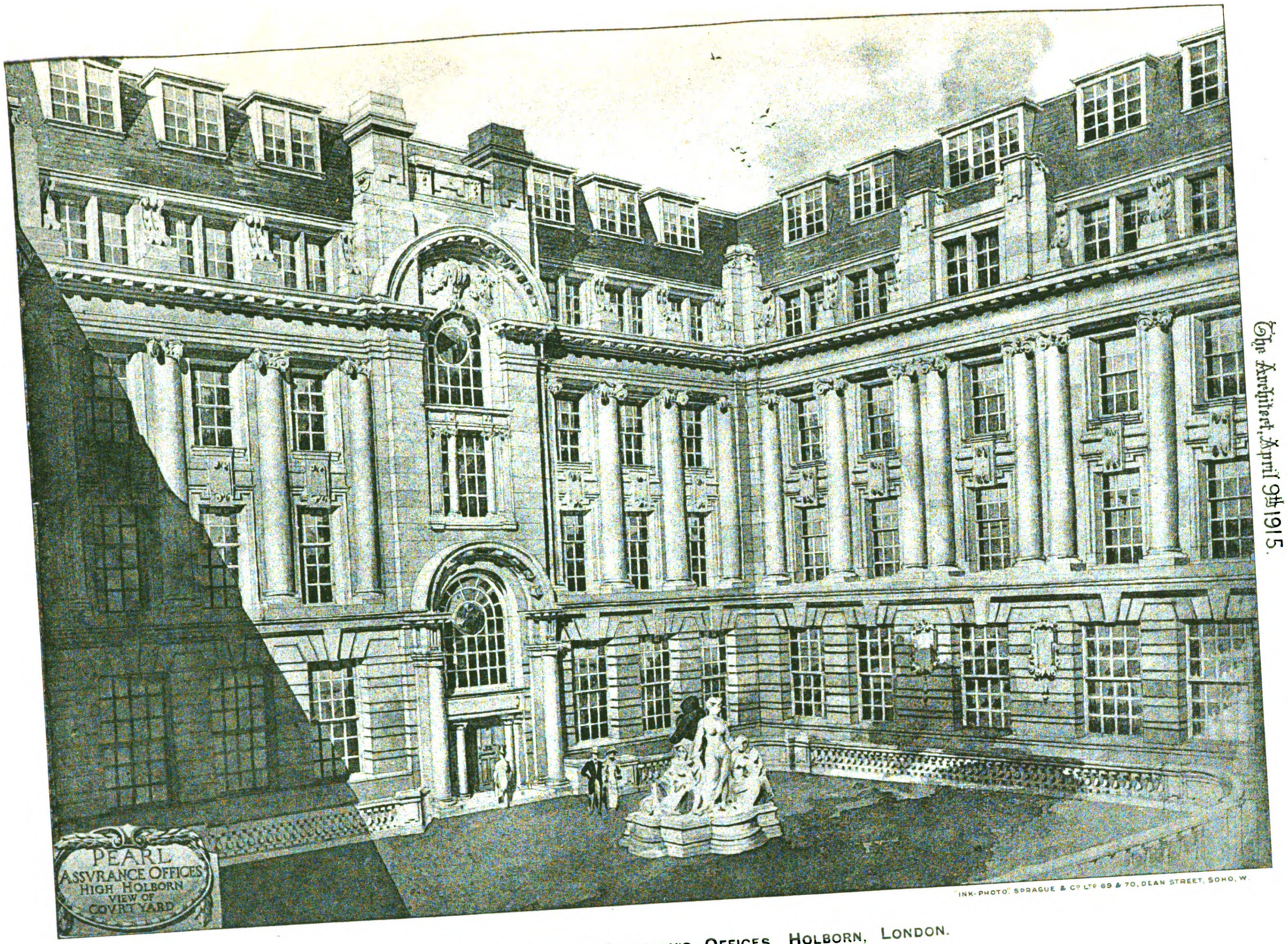
SOUTH DOOR, ST. NICHOLAS, KING'S LYNN

From a water-colour by Mr. W. GANDY.

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Colonel Donne gives evidence of very artistic treatment of effective subjects. Mrs. Moberley's dogs are as attractive as usual, but she is not so successful in "East Wind," where the brushwork is somewhat confused and the colour-tones indifferent. Mr. R. S. Standen maintains his reputation in "Above Cadenabbia" and "Danbury Common." Mr. Cafe's "Canterbury Cathedral" would be the better for some devilment, though it is a noticeable study. "The Cottage under the Hill," by Mr. R. Walters, is commendable for preservation of the values, and Mr. C. T. Davidson's contributions are also amongst the good exhibits.

We are pleased to encounter once again Miss E. M. B. Warren's art; the kindly interest which the veteran Mr. Ruskin evinced in her from her school-girl days onwards to his death is reflected in the productions of her brush, some characteristic examples appearing in the present collection. But "Waiting for the Wounded" is not one of these, except so far as the landscape portion is concerned; the light striking the edge of the faces proves unhappy for their modelling, though the wayside crucifix is well touched in. The last picture for which we can find space in this notice is Mr. Arthur Meyrick's "Menok, Norway," which proved to be one of the best of all the exhibits. We have referred to the work of but some 20 per cent. of the exhibitors, but we wish it to be understood that much that is praiseworthy has been of necessity passed over here for lack of space.

PROBLEMS IN MODERN ILLUMINATION.*

By VALENTINE H. MACKINNEY.

(Concluded from last week.)

The Four Elements of Vision: Contour, Relief, Perspective, and Colour.

The sensation of vision is usually considered as being comprised of four elementary sensations. Contour, relief, perspective, and colour. Of these, the two most important to be considered in illuminating engineering are relief and colour. Illumination with an entire absence of shadow may hinder easy vision by interfering with the perception of relief. Thus, spaces which are uniformly illuminated from a large area of light source usually give an uncomfortable impression owing to this elimination of all relief. Unduly dense shadows, such as are caused by a few light sources of high candle power and small area (high intrinsic brilliancy) are fully as misleading as an entire absence of shadow, and multiple shadows are often troublesome (*e.g.*, in ball games).

Fortunately, it is very difficult to get absence of shadow. One could only do this by arranging a room with entirely white ceiling, walls, and floor, thus reproducing the effect of an Ulbricht sphere.

Correct colour values are mainly important in certain trades. For domestic lighting many people like the warm yellow light of the flat flame gas burner or the carbon lamp, which is regarded as the natural transition from the sunset, but for industries such as silk, cloths, carpets, dyeing, tobacco, and the like, where the matching of colours is necessary, a white light, closely resembling daylight, is preferable. The colour of an object depends on two factors, its own natural colour and the quality of the light striking it. A third—purely subjective factor—is the colour-vision of the eye by which the object is perceived. Clearly, the hue of an object is distorted when the illuminant contains excess or lack of certain qualities of radiation which occur in normal daylight. Most artificial illuminants contain more red and relatively less blue than daylight; consequently, blue objects (which commonly reflect a mixture of red and blue light) are very readily affected.

Many attempts have been made to place the usual illuminants in order of colour-revealing qualities. It is generally admitted that among electrical illuminants the arc light and the Moore carbon dioxide tube are among the first. Vapour lamps, such as the mercury vapour tube and the neon tube, in the spectra of which certain colours are entirely missing, would come at the extreme end of the list, and are remarkable for the complete colour-distortion they produce.

The light from the arc can be brought very near to daylight by the use of suitable screens.

It is well known that the light from a tungsten lamp can be converted into a close resemblance to daylight by the use of certain colour-screens. This involves a considerable loss in light; in cases where very accurate results are needed the transmitted light may be only 15 per cent. of the original. With the half-watt lamp the same result is obtained more efficiently.

(*a*) On account of the higher efficiency of the source.

(*b*) Because it is not necessary to cut off so much of the light owing to its "whiter" quality.

It may be noted that an object having the same brightness and the same colour as its surroundings becomes indistinguishable from them. For this reason the Germans have adopted a blue-grey for the predominant tint of their uniforms, and it is said that the troops now being sent to the Front in snowy Poland are being clothed in white.

Globes, Shades, and Reflectors.

Useful shades can be made of transparent, diffusing, and opaque substances; the material may be either metal, glass, cardboard, silk, &c. Little is known of the precise diffusing and reflecting, diffracting, and refracting properties of these various materials, and the time seems ripe for a closer study than has hitherto been the case.

It is rare that either the brilliancy or the light distribution of the illuminant are such as desired. A shade more often than not serves the twofold purpose of modifying the brilliancy and the distribution, but as yet it is rare for the results to be predetermined on theoretical grounds in advance of manufacture. Diffusion, diffraction, refraction, and reflection all have an importance bearing on the brilliancy and distribution of the resultant light unit (source and shade).

Steinmetz, in his most excellent book on "Radiation Light and Illumination," deals with these matters in detail.

Diffraction.—The beam of light issuing from the source is, in traversing the diffracting plate, scattered over an angle, that is, issues as a bundle of beams of approximate equal intensity in the middle and fading at the edges. The direction of the scattered beams of light, that is, its centre line, is the same as the direction of the impinging beam irrespective of the angle made by the diffracting sheet with the direction of the beam.

Diffusion.—The main beam of light passes through the opal plate without scattering or change of direction, but with very greatly reduced intensity; usually also with a change of colour to dull red, due to the greater transparency of opal glasses for long waves. Most of the light, however, is irregularly reflected in the opal glass, and the point or area at which the beam strikes the opal sheet becomes a secondary radiator, and radiates the light with a maximum intensity at right angles to the plane of the opal sheet.

Opal is an excellent diffuser, and reflects light to a considerable degree, but its power of controlling (re-directing) the light is limited. With the present-day filament lamps it is not possible with its aid to produce an extensive or highly concentrating distribution curve. The same remarks apply to the new white glass shades recently introduced into this country.

From the above it will be gathered that a frosted globe and an opal globe are by no means equivalent in their action on the distribution of the light flux, a diffracting envelope leaves the distribution curve of the illuminant essentially unchanged, and merely smooths it out by averaging the light flux over a narrow range of angles, while the diffusing envelope entirely changes the distribution curve by substituting the diffusing globe as secondary radiator, and retains only for a small portion of the light—that of the direct beam—the original distribution.

An incandescent lamp filament in an opal globe (not too dense) is therefore clearly but faintly visible, surrounded by a brightly luminous globe, while in the case of the frosted globe the filament appears as a bright ball of light, while its outline is not visible, the globe being non-luminous, or but faintly luminous. It often occurs that both diffraction and diffusion take place together, the material employed for the shade being composite in its effect.

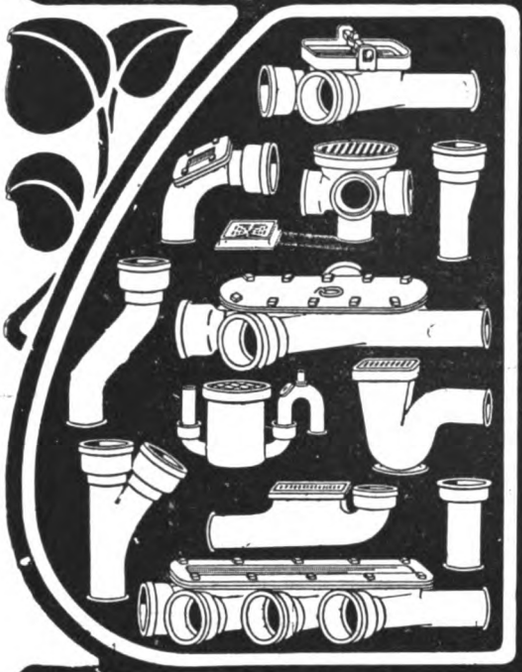
Refraction. This occurs in the well-known clear glass prismatic (ribbed) globes. The prisms diffuse the light in the vertical planes as well as redirect it in the desired manner.

The fact that both good diffusion and re-direction of the light rays can be obtained with clear glass, and, consequently, for a low absorption value for the resultant globe, gives this class of material a distinctive position over other types. Clear glass shades (reflectors) with only one set of prisms on the outside diffuse the light only partially; but,

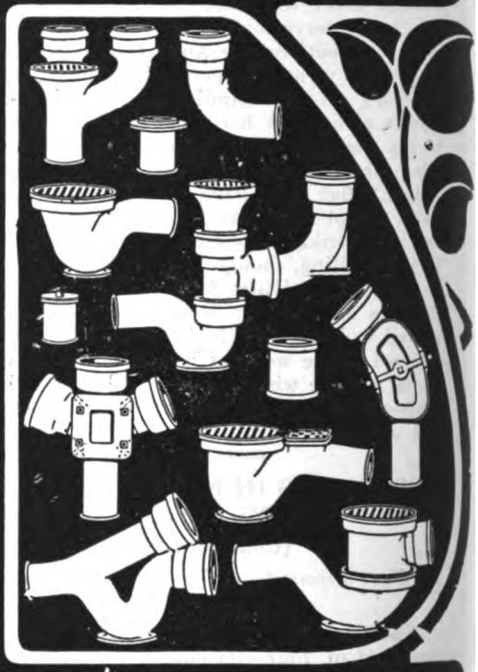
* A Paper read by Mr. E. Stroud before the Institute of Sanitary Engineers.

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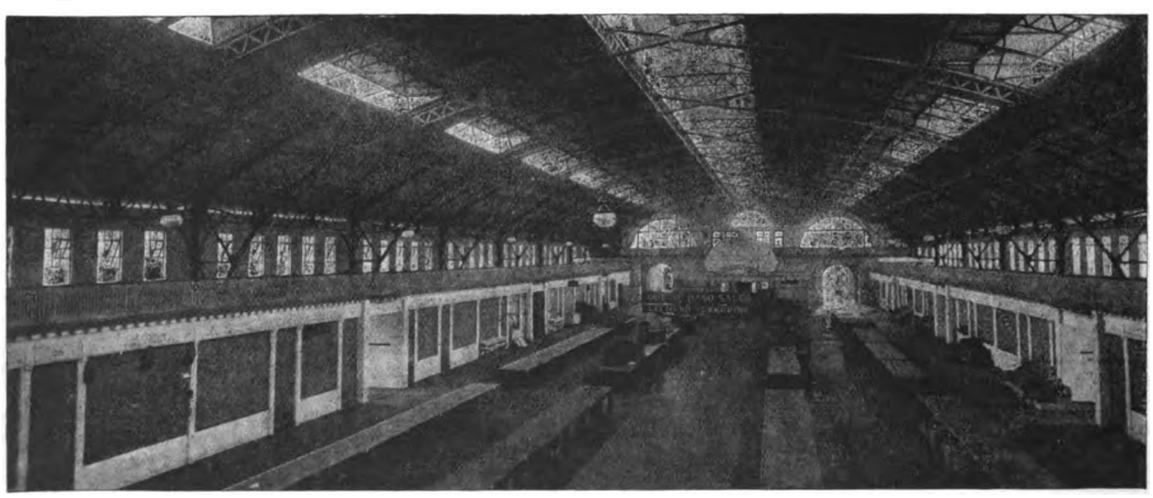


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as in this case (with correctly designed and manufactured units) only 20 per cent. of the light is transmitted. If the units are placed out of the normal field of view "glare" effects are not noticeable.

It is to be observed that clear glass diffusion is quite different to the diffusion from opal and other similar types of glass shades. The diagrams show this fact. For it may be noticed that in the case of the clear glass the areas which effect the diffusion are of material size, whereas in the case of the opal, or similar glass, each minute particle of the substance produces upon one ray the effect of 180° distribution, as against the bundle of rays over a definite area in the case of the clear glass. We may term the effect produced "soft" and "hard" respectively. Many people prefer that the shade should sparkle a little, than that it should appear uniformly dull. It is a matter of personal fancy, and undoubtedly both types have their sphere of usefulness in practice.

Clear glass with correctly designed prisms affords a means of controlling light to the greatest extent and re-directing it more efficiently than any other known material. This fact cannot be refuted.

The following table summarises on broad lines the properties of the various materials referred to in this paper:—

Material	Its power for: Diffusing	Reflecting	Refracting
Clear prismatic glass	Good	Excellent	Excellent
Opal or white glass	Excellent	Limited	—
Sand-blasted or acid-etched glass ...	Limited	—	—
Mirrored glass	—	Excellent	—
Silk or similar dress material	Limited	Good	—
Opaque cardboard with matt white surface	Excellent	Good	—

Functions of Shade.

The main functions of a shade might perhaps be defined as follows:—

1. The screening of the source of light from the eye and avoidance of glare.
2. The direction of the light where it is chiefly needed (*e.g.*, reduced illumination of the upper parts of the walls and ceiling, and improved illumination on the working plane).
3. The softening and toning down of shadows.
4. Decorative effect.

Of these, the economical advantage of altering the distribution of light from a source so as to suit one's convenience is manifest. The lamps available at the present time admittedly differ enormously in this respect. Note, for example, the contrast in the light immediately below an upright and an inverted mantle, and the difference in the distribution from carbon, ordinary tungsten, and half-watt lamps.

The upright gas burner, carbon and ordinary tungsten lamps, give the maximum candle power in the horizontal direction, with a great diminution in the vertical axis, due to the construction of the burner or the formation of the filament. In the case of the inverted gas burner and the half-watt lamp the candle power is approximately the same over the lower hemisphere.

The horizontal candle power measurement was adopted simply because it was the customary and most convenient method of measuring the light intensity of gas, oil, and candle flames, which burn generally in a vertical direction. Incandescent lamps, however, may be used in any and every position, and in addition it is possible to alter considerably the distribution of light from an incandescent lamp by the simple process of changing the shape of the filament.

As horizontal measurement of candle power disregards all light emitted save that emitted in a horizontal direction, and as light sources giving widely different total amounts of light may emit the same amount of light in a horizontal direction, it obviously follows that this method of candle-power measurement is incomplete, especially when lamps of different types of filaments are compared.

A full and complete measure of candle power requires consideration of the light given in all directions, or at all points of a sphere surrounding the lamp. If we take the mean of all these candle-power values we have what is termed the mean spherical candle power. This measurement, the author ventures to suggest, should be the standard method of rating lamps, as then it would be quite easy to obtain the actual quantity of light emitted, and thus be directly comparable one source with another. In any case it is rare that the source gives exactly the distribution of light required for a specific problem, and it is almost always necessary to use with it a suitable reflector.

The following curves show how the bare lamp distribution can be altered, and how great are the advantages to be derived by using a suitable shade.

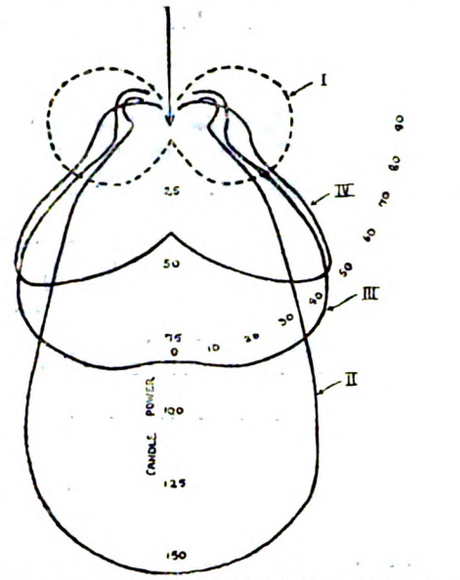


FIG. 1.—Distribution Curve of Holophane Extensive, Intensive, and Focussing Reflectors.

Fig. 1 shows the distribution of the extensive, intensive, and focussing holophane reflectors which covers a zone of 45°, 30°, and 15°. Fig. 2 shows the distribution obtained from

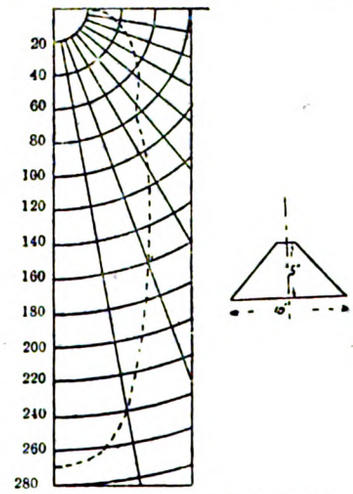


FIG. 2.—Distribution Curve of Tungsten in Fluted Mirror Glass Shade.

a conical fluted mirror reflector, which gives a very concentrating curve. Fig. 3 shows the distribution obtained from a bowl type white glass shade, which is of a general nature.

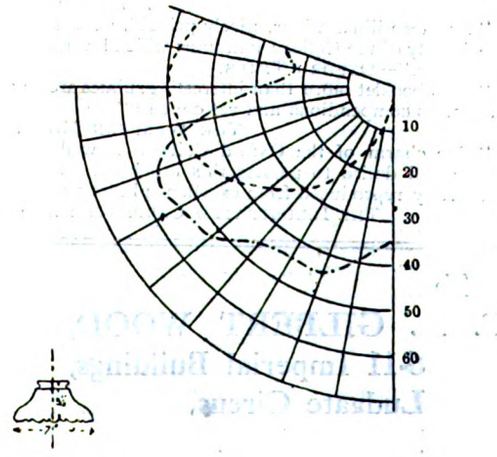


FIG. 3.—Distribution Curve of Bare Tungsten Lamp and same Lamp in White Glass Reflector (Open Type).

This set of curves of open-type reflectors shows rather an interesting set of conditions. That with white glass one can only obtain a general distribution; with mirrored reflectors only concentrated distribution; and with prismatic

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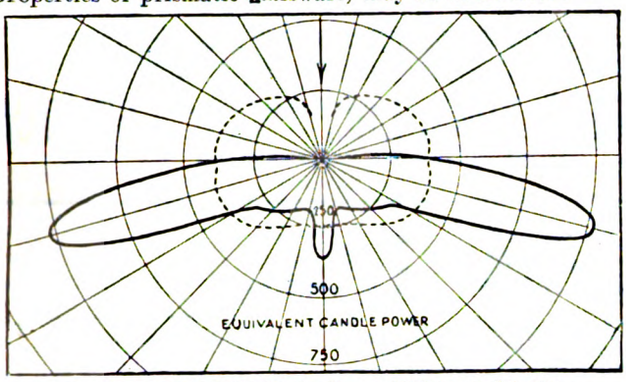
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reflectors, properly designed, any distribution from extremely concentrating to extensive can be obtained.

The following curve, fig. 4, as showing the refractive properties of prismatic glassware, may be of interest:—



Characteristic Light Distribution Curve of "Refractor" Lantern.
Lamp Alone. Lamp with "Refractor" Lantern.

Fig. 4.

This curve is obtained from an enclosed prismatic unit, in conjunction with a 400-c.p. half-watt lamp. The unit is specially designed for street lighting, and gives the maximum illumination (which maximum is two and a-half times the rated maximum candle power of the lamp) at an angle of 15° from the horizontal, which angle is considered ideal for the purpose. The great advantage of this type of distribution for street lighting is that it is possible to obtain more or less even illumination down the whole street, rather than intense light in the close proximity of lamp standards, with great diminution of illumination between them. The particular unit from which this curve was obtained is made up of two pieces of prismatic glassware, one fixed inside the other. The internal piece has a smooth interior and horizontal ribbings on the exterior, and the external piece has a smooth exterior and vertical ribbings on the interior. These, when fixed together, offer both a smooth interior and exterior, which does away with the objection as a dirt collector of prismatic glassware when used in the open.

The Measurement of Illumination.

Consider a light of one-candle power intensity in all directions placed at the centre of a hollow spherical shell of 1 foot radius. This light would illuminate the inner surface with an intensity of 1 foot candle, and the illuminated area would be 4π (12.56) square feet, since the surface of a sphere is found by multiplying the square of the radius by the constant 4 .

If the same light were placed at the centre of a spherical shell of 2 feet radius, the quantity of light originally distributed over the area of 4π square feet would now be distributed over an area of four times 4π (50.28) square feet. It is readily seen that the illumination on the larger surface would be $\frac{1}{4}$ of a foot candle, since the total amount of light is the same in both cases, and the larger surface is four times the smaller. Hence normal illumination in foot-candles is found by dividing the candle power of the source by the square of its distance from the surface illuminated.

$$\text{Therefore, normal illumination} = \frac{\text{candle power.}}{\text{distance squared}}$$

This rule, known as "The Law of Inverse Squares," does not apply where the light falls obliquely on the surface under consideration.

This measurement of illumination is able to be carried out with great ease and simplicity by various instruments on the market, which are very portable and a great help in practical lighting problems.

Various Methods of Lighting.

Lighting may be classified in three methods—direct, semi-indirect, and indirect. Of the three, semi-indirect might be considered as the ideal. As with this form one gets the advantages of soft shadows and diffused lighting without the disadvantages of harsher shadows in direct lighting, and the peculiar upside down or "well effect" of indirect lighting. This "well effect" is more noticeable with indirect lighting should the walls be darker, as one sees the very bright ceiling and dark lower portion of the room. A practical example of this is in the lecture-room of the Institute of Electrical Engineers, London, where the room is lit by concealed cornice lighting and the walls are of dark mahogany panelling.

For fine work local direct lighting is essential. At a certain examination in the making of jewellery, indirect lighting by means of arc lamps was arranged, but, although the illumination was good, objections were raised, and local direct points were installed to enable the workers to get the contrast and shadow or relief necessary for their purpose.

In connection with libraries, reference rooms, where one would sit and study at length, local direct lighting is required, while for reading rooms good general illumination is best, as one would wish to read in comfort, holding the book in any position without obtaining harmful shadows.

In the case of rifle ranges, even lighting of the targets is essential. Should one target be better lit than another it would give competitors undue advantage, and also in this case the lights must of necessity be obscured from view, as any glare would be greatly detrimental to the marksman.

Reflection Value of Surroundings.

In calculating illumination value it is necessary to take into account the effect produced by the light reflected on to the working plane by the surrounding objects. It is quite possible to obtain an increase of as much as 80 per cent. in the illumination on a horizontal plane when the room is small and the surroundings light. Speaking broadly, the increase in the actual illumination is as folows:—

Condition of Ceiling	Condition of Walls	Increase over Calculated Illumination per Cent.
Very dark	Very dark	0
Medium	Very dark	15
Medium	Medium	40
Very light	Very dark	30
Very light	Medium	55
Very light	Very light	80

In very large rooms the effect of reflection from the walls would be less important, although ceiling reflection must be considered. In large spaces, however, the decreased importance of wall reflection is to some extent counterbalanced by the effect of distant light units, their tendency being to improve both the average intensity and the uniformity.

Following are lantern slides showing typical fittings equipped with illuminating glassware, which harmonise one with another in a marked degree; also slides showing some recent installations taken by their own artificial illumination.

In conclusion, the following simple rules should be observed:—

Don't work in a flickering light.

Don't expose the eyes to unshaded lights in the direct range of vision.

Don't judge illumination by the brightness of the lamps.

Avoid extensive contrasts.

Use the right type of globe, shade, or reflector.

Make sure that the illumination is sufficient.

Keep lamps, globes, and reflectors clean.

Make sure that lamps are in the right position.

These rules were published in the "Illuminating Engineer," and reprinted in booklet form, headed "Light and Illumination; their Use and Misuse."

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

A meeting of the Society was held on Tuesday, March 30, at 64 St. James's Street, Nottingham, under the chairmanship of the President, Mr. Harry Gill.

Mr. R. C. Stenson was elected an Associate.

After other business had been disposed of, the President introduced a discussion on Town Planning, dealing more especially with the various legal points to be considered.

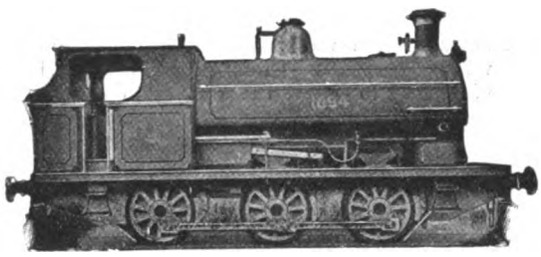
Mr. Pare, the Surveyor to the West Bridgford U.D.C., gave the meeting actual figures of the costs of road-making which Mr. Calvert, of Nottingham, supplemented.

Mr. Bromley then dealt with Town Planning, more particularly from the architect's point of view, and remarked that in his opinion it was the enormous cost of road-making according to by-laws which influenced all schemes of Housing Reform. The frontage had consequently to be cut down to the narrowest limits.

He showed by sketches and diagrams suggestions for improving the planning of small property so as to give every room more day and sun light.

An interesting discussion took place, in which most of the members present took part, and at the close thanks were accorded to the President, Mr. Pare, Mr. Calvert, and Mr. Bromley for the useful information they had given.

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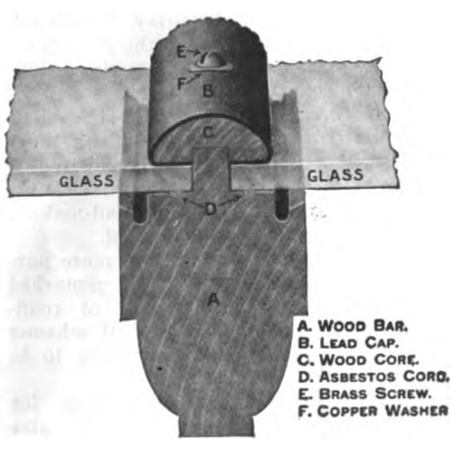
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BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BERKSHIRE.

Abingdon.—Picture palace: enlargement. Mr. J. G. T. West, architect, The Knowl, Stut Street.

BUCKINGHAMSHIRE.

Chalfont St. Peter.—House, Gold Hill, for Mr. L. S. Wood.

CAMBRIDGESHIRE.

Cambridge.—Women's Institute. Mr. H. H. Dunn, A.R.I.B.A., County architect, County Hall.

DERBYSHIRE.

Chinley. — The High Peak Hospital: enlargement (£1,100). Mr. C. Flint, architect, 5 The Quadrant, Buxton.

Glossop.—Proposed nurses' home, for B.G.

Ilkeston.—St. John's Vicarage (£2,300).

DEVON.

Barnstaple.—Council school (£10,000).

Braunton.—Houses, Hill's View. Mr. B. W. Oliver, A.R.I.B.A., architect, Bridge End, Barnstaple.

Torquay.—Council school (£10,000).

ESSEX.

South Benfleet and South Woodford.—Council schools.

Witham.—Motor garage, for Mr. O. Heddle.

Offices for the Witham Cartage Company.

GLOUCESTERSHIRE.

Churchdown.—Bungalow, Cooper's Hill, for Rev. W. E. Rice.

Longford.—Villa, Kingsholm Road, for Mrs. Patrick.

HAMPSHIRE.

Aldershot.—Four Council cottages (£750). Council surveyor.

Ropley.—Proposed parish hall.

HERTFORDSHIRE.

Barnet.—Nurses' home (£3,000): extension. Messrs. White, Son & Pill, architects, 13-15 High Street.

KENT.

Sidcup.—Council school, Sidcup Hill: proposed additional 140 places.

LANCASHIRE.

Manchester.—Ancoats Hospital: extension. Mr. W. C. Hardisty, F.R.I.B.A., architect, 5 John Dalton Street.

LINCOLNSHIRE.

Grimsby.—Tuberculosis pavilion, Scartho.

Holbeach.—Children's home, for B.G. Mr. S. Stallebrass, architect, 26 North Street, Peterborough.

Stamford.—"Crown" Hotel: extension. Messrs. Phipps & Co., Ltd., architects, Gold Street, Northampton.

MIDDLESEX.

Pinner.—Council elementary school.

Tottenham.—Council school, Park Lane, for 750 to 800 places.

Council school, Vale Road, for 800 places.

MONMOUTHSHIRE.

Blackwood.—Conservative Club, Twynyffwd. Mr. D. J. Thomas, architect, High Street.

SHROPSHIRE.

Shrewsbury.—Proposed tuberculosis sanatorium.

SOMERSET.

Radstock.—C.E. Elementary school, Westfield, for 120 places.

STAFFORDSHIRE.

Cannock.—Forty-four Council houses.

Hales.—Public elementary school.

Sedgley.—Council school, Robert Street: additional sixty-eight girls' places.

Tamworth.—Cemetery: chapel (£950).

SUSSEX.

Eastbourne.—Proposed St. George's Church (£2,000).

WARWICKSHIRE.

Coventry.—Mission Hall, Stratford Street, Upper Stoke, for the Committee of Stoke Parish Church.

Four houses; also house, shop and stables, Clay Lane, for Messrs. Youell & Brooks.

House, corner of Burlington Road, for Mr. J. P. Jorgenson.

Eight houses, David Road, for Mr. J. G. Gardner.

Twelve houses, Queen Mary's Road, for Mr. T. Carvell.

Three houses, Queen Mary's Road, for Mr. J. Clifton.

Ten houses and a stable, Welland Road, for Mr. B. Gilbert.

Edgwick Works: cupola house, &c., for Alfred Herbert, Ltd.

Nuneaton.—Two houses, Norman Avenue, for Mr. J. B. Hingley; also

Four houses, Princes Avenue.

House, Hinckley Road, for Mr. A. E. Johnson.

House, Marlborough Road, for Mr. S. Wills.

Three houses, Bracebridge Street, for Mr. W. E. Mayo.

WILTSHIRE.

Pewsey.—Proposed children's home, Kepnall, for B.G.

YORKSHIRE.

Elland.—All Saints' Church and school: completion.

Howden Clough.—School, for Birstall Education Committee.

Pontefract.—King's School: addition. Mr. A. Tennant, architect, Ropergate.

WALES.

Cardiff.—Church. Mr. C. James, F.R.I.B.A., architect, Charles Street Chambers.

Dowlais.—Proposed R.C. schools.

Llanelly.—House. Mr. N. Chedburn, architect, 6 Stepney Street.

Penarth.—House, Lower Westbourne Road. Mr. T. E. Richards, architect, 32 Queen Street, Cardiff.

Swansea.—Waunwen Council school: additions and alterations. Borough Architect, Prospect Place.

SCOTLAND.

Ardrossan.—Proposed 780 working-class houses, Ardeer, for the Ardeer Garden Village, Ltd.

Clydebank.—Eight tenements, Clyde Street, for Messrs. J. Brown & Co., Ltd.

Cupar.—South Bridge Works: alterations, Station Road. Mr. C. Storrar, architect, 3 St. Catherine Street.

Edinburgh.—Nos. 24 and 25 South Bridge: alterations, for Messrs. J. Hepworth & Son, Ltd.

Nos. 9 and 11 Charlotte Lane: alterations, for Mr. J. Watherton.

Nos. 13 to 16 Greenside Place: alterations, for Mr. J. A. Greig.

No. 2 Greyfriars' Place: alterations, for Mr. W. G. Henderson.

No. 19 Joppa Road: alterations, for Mr. A. D. Richardson.

Ellon (Aberdeen).—Steading, Heron Croft: additions and alterations. Mr. W. Davidson, architect, 48 Devonshire Road, Aberdeen.

Glasgow.—Gartloch Asylum: additions.

Electricity Works, Dalmarnock.

No. 777 London Road, for Springfield Steel Co., Ltd.

Business premises, corner of Wilson and Virginia Streets: additions and alterations, for Scottish Legal Life Assurance Society.

Engine house, &c., Strathclyde Street, for Messrs. Penman & Co., Ltd.

Iron foundry, Edgefauld Road, Springburn, for N.B. Locomotive Co., Ltd.

Hall and rooms, corner of Dane's Drive and Lennox Avenue, Scotstoun, for the Vestry of All Saints' Episcopal Church.

Premises, Caxton Street, Anniesland: additions and alterations, for Messrs. Barr & Stroud, Ltd.

Public school, Copland Road: addition, for Govan School Board.

Works, Rigby Street: additions, for Messrs. W. Beardmore & Co., Ltd.

Corporation dwelling-houses, College Lane and College Street.

IRELAND.

Belfast.—Foundry and fitting shops, Antrim Road, for the Shamrock Aluminium Co. Mr. C. MacAlister, architect, Whitehall Buildings, Ann Street.

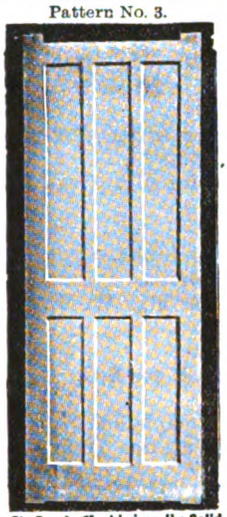
Donaghadee.—Stables, offices, &c., for Messrs. C. Neill & Son (of Bangor). Mr. W. D. R. Taggart, C.E., architect, Scottish Provident Buildings, Belfast. Messrs. Gordon & Sons, contractors, Ann Street, Newtownards.

Dublin.—R.C. Church, Gloucester Street.

Newry Port.—Proposed isolation hospital, Rough Island, Fathom.

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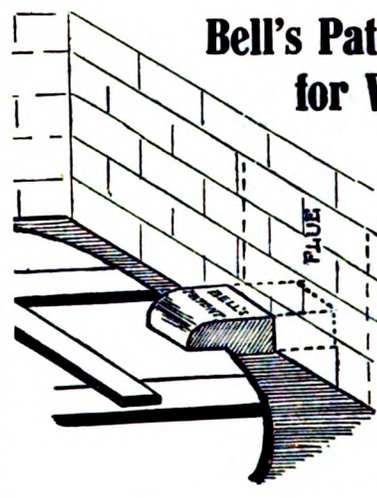
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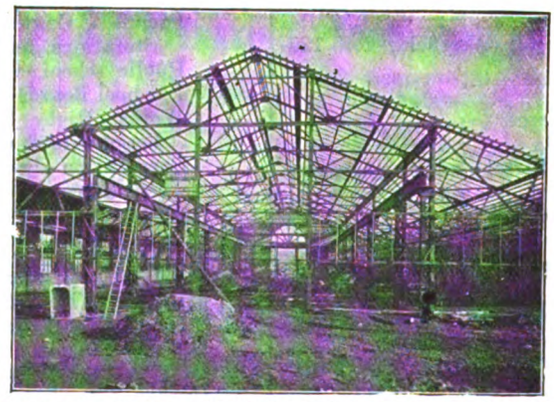
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THE
Architect and Contract Reporter.
FRIDAY, APRIL 9, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

Galemire (Whitehaven).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

Ireland.—The Louth County Council invite architects to submit designs in competition for new county offices, to be erected in Dundalk, and have appointed Professor William A. Scott, A.R.I.B.A., F.R.I.A.I., A.R.H.A., to act as their assessor. Conditions of competition may be obtained from the county secretary on receipt of a deposit of two guineas, which will be returned on receipt of a *bona-fide* design, or the return of the conditions within seven days. Mr. Charles McAlester, county secretary, Courthouse, Dundalk.

Stepney.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

Whitehaven.—April 21.—The Town Council invite competitive designs for the laying out of the Coach Road site (6a. 1r. 25p.) within the borough and erection of houses thereon. The author of the design placed first in order of merit may be employed as architect on terms to be arranged, and if not so employed will receive a premium of thirty guineas. The author of the design placed second will receive twenty guineas, and the third ten guineas. Copies of conditions of competition and plan of site and other particulars can be obtained on application, upon depositing £2 2*s.* The Borough Surveyor, Town Hall, Whitehaven.

CONTRACTS OPEN.

Ashington (Northumberland).—April 17.—For the supply and erection of the following, for the Ashington Urban District Council: (1) steel-framed retort house, coal store, purifier house and steel chimney; (1A) continuous vertical retort house, retort bench and coal store complete; (2) retort bench, regenerator settings and retort ironwork; (3) boiler house, stores, offices and concrete foundations; (4) concrete gasholder tank and tar and liquor tanks; (5) gasholder. Deposit £5 5*s.* Mr. C. Alderson, clerk, Bridge Street, Morpeth, or Messrs. W. A. Valon & Son, Caxton House, Westminster, S.W.

Byfleet.—April 26.—For the erection of an additional engine-house, gas-generating house, new workshop, and coal store adjoining the present pumping station, Byfleet village, together with engine beds and other building works, for the Chertsey Rural District Council. Mr. Charles Muggleton, Byfleet Corner, West Byfleet.

Chadwell Heath.—April 12.—For erection of a greenhouse in Romford Road, Chadwell Heath, Essex. Messrs. Belfrage & Saville, architects, 27 Chancery Lane, W.C.

Gamlingay.—April 15.—For erection of three pairs of cottages at Gamlingay, Cambs., for the Caxton and Arrington Rural District Council. Mr. S. G. Wilkinson, clerk, St. Neots.

Great Driffield.—April 19.—East Riding of Yorkshire Hospital Committee are prepared to receive whole tenders for enclosing and laying-out the site and for the erection of the various buildings in connection with a proposed infectious diseases hospital for thirty-two beds. The work will be divided into two portions, and contractors may submit tenders for the whole of the work or for the portions as divided—viz.: (1) Enclosing and laying-out the site and erection of administration block and porter's lodge; (2) erection of three pavilions for thirty-two beds and laundry block. Deposit £2 2*s.* Mr. B. B. Stamford, architect and surveyor, County Hall, Beverley.

Halifax.—April 17.—For the execution of the work required in erection and completion of tramway waiting-room and tool-house, Stump Cross, for the Corporation Tramways Committee. Deposit £1. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

Ireland.—April 19.—For alterations and additions to Skerries Station, for the Great Northern Railway Company (Ireland). Deposit £1 1*s.* The Engineer's Offices at Dublin and Belfast.

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Ireland.—April 21.—For building ninety-one labourers' cottages, under eight contracts, and for roadmaking and other works, under one contract, for the South Dublin Rural District Council. A contractor may tender to build all the cottages and perform all the other works, or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the architect, under a penalty for delay. Mr. T. J. Byrne, clerk of the Council, 1 James Street, Dublin.

Leeds.—April 21.—The City of Leeds Education Committee invite tenders for the repairs to buildings and furniture for the period ending September 30, 1915, in separate trades, as follows: Bricklayer and mason, carpenter and joiner, plumber, slater, plasterer, smith and founder, heating engineer, concretor, and painter. The Architect's Section, Education Offices, Leeds.

Lowca.—April 24.—For the various works required in the erection and completion of twenty-five houses at Lowca, Cumberland, for the Workington Iron and Steel Company, Ltd. Mr. C. W. Eaglesfield, architect and surveyor, Gordon Street, Workington.

Newlyn (Cornwall).—April 28.—For the construction of a reinforced-concrete face wall to part of the existing North Pier, Newlyn Harbour, for the Newlyn Pier and Harbour Commissioners. The length of pier to be faced is constructed in openwork reinforced concrete. Parties tendering are required to submit their own designs and calculations for the details of the construction. Deposit £1. The Clerk to the Commissioners, Public Buildings, Penzance, or Messrs. Douglass, Lewis & Douglass, the engineers to the Commissioners, 15 Victoria Street, Westminster, London, S.W.

Plymstock.—For erection of a bathroom wing at Park Cottage. Mr. E. W. Lister, Licentiate R.I.B.A., Clock Tower Chambers, 27 George Street, Plymouth.

Portsmouth.—April 19.—For erection of a tuberculosis hospital at Langstone, Portsmouth, for the Corporation. Deposit £3 3s. Mr. A. E. Tutte, architect, 58 London Road, North End, Portsmouth.

Rodney Stoke.—April 12.—For construction of a pumping station and works at the Old Mill, Rodney Stoke, near Cheddar, for the Street (Somerset) Urban District Council—viz.: (1) Adaptation of existing sheds and building new part to form engine-house; (2) erection of small water tower, 40 feet high (alternative tenders are required for (*a*) brick built and (*b*) steel construction); (3) supplying and fixing air-lift pumping plant with 12-h.p. oil engine and belt-driven air compressor, pipes, valves, &c., capable of raising at least 3,000 gallons of water per hour from an existing borehole alongside the proposed new works. Mr. W. H. Cousins, P.A.S.I., surveyor to the Council, Council Offices, Street, Somerset.

Scotland.—April 15.—For the mason, carpenter, slater, plaster, plumber, and painter work of additions and alterations to the Established Church manse of Gamrie. Mr. G. Morrison, architect, Woodbine Cottage, Macduff.

Shotton.—April 13.—For erection of fifty workmen's dwellings, the construction of streets and sewers, and all other works connected therewith, for the Easington Rural District Council. Deposit £2. Mr. G. Waterhouse, architect, Council Offices, Easington, Easington Colliery, Co. Durham.

Wales.—April 13.—For erection of five houses, Madeira Hill, Wrexham. Mr. F. A. Bevan, architect, High Street, Wrexham.

Wales.—April 14.—For erection of a bridge over the Swansea Canal for the new supplemental road, Ystalyfera, for the Glamorgan County Council. The Police Station, Ystalyfera, and at the Glamorgan County Hall, Cardiff.

Wales.—April 17.—For rebuilding front elevation and carrying out other work at the Great Western Hotel, Quaker's Yard, Glamorgan, for Mr. E. Edwards. Mr. T. Edmund Rees, M.S.A., architect, Bank Chambers, Merthyr Tydfil.

Wales.—April 19.—For altering, renovation, and erecting certain additions to Tabernacle Congregational Church, Fishguard. Mr. J. G. Martin, secretary, London House, Fishguard.

Wales.—April 22.—For the laying of wood-block flooring at the Grangetown Council girls' school, Bromsgrove Street, Cardiff, for the Cardiff Education Committee. Mr. J. J. Jackson, director of education, City Hall, Cardiff.

Whitchurch.—April 20.—For building the Dods Green Wesleyan Chapel. Rev. T. Barron, St. John's Manse, Whitchurch.

TENDERS.

IPSWICH.

For the enlargement of the municipal secondary school for boys, for the Education Committee.

Sadler & Sons	£1,930 0 0
Green	1,850 0 0
Kenny	1,823 0 0
Bennett & Snare	1,822 0 0
Marriott	1,795 0 0
Catchpole & Sons	1,765 0 0
Cubitt & Gotts	1,763 0 0
W. C. Reade, Aldeburgh (*accepted*)	1,679 0 0

LEYTON.

For the construction of underground conveniences at the junction of Church Road and Lea Bridge Road, for the Leyton Urban District Council. Mr. E. H. Essex, A.M.I.C.E., Leyton.

Manders & Co.	£2,177 15 5
Shurmur & Son	2,034 0 0
F. & G. Foster	1,998 0 0
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Marrable	1,910 0 0
J. & J. Dean	1,890 0 0
Horswill	1,880 0 0
Coxhead	1,785 0 0
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Russell	1,762 0 0

LONDON.

For enlarging the boiler-room and providing additional storage accommodation for fuel at the Netherwood Street School, Hampstead, for the London County Council.

Tennant & Co.	£410 0 0
Marchant, Hirst & Co.	369 0 0
Watson	355 0 0
Ford & Walton, Ltd.	343 0 0
Mather	335 0 0
Stevens & Sons	322 0 0
Brown	268 0 0
Bovis, Ltd., 43 Upper Berkeley Street, Portman Square (*recommended*)	257 0 0
Architect's estimate	267 0 0

For installing a low-pressure hot-water heating apparatus at the Cranbrook Road School, Bethnal Green, for the London County Council.

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Cannon & Hefford	968 0 0
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Architect's estimate	920 0 0

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For erection of working-class dwellings in City Road, for the City Council.

William Hall (*accepted*)	£6,828 0 0

WALES.

For the erection and completion of public lavatories and fire-hose station at Caerau, for the Maesteg Urban District Council. Mr. S. J. Harpur, M.I.M. and C.E., architect and surveyor, Maesteg.

Gaylard	£584 3 1
Lewis	579 0 0
Broadfoot	508 13 6
R. Protheroe, Caerau, Maesteg (*accepted*)	486 12 7

For the extension and alteration of "Wauniago," near the Carmarthen Central Hospital, for the Committee of Visitors. Messrs. George Morgan & Son, architects, 24 King Street, Carmarthen.

Mercer & Sons	£2,600 0 0
Rees Davies	2,235 0 0
Smith Bros.	2,210 0 0
Bartlett Bros.	2,203 0 0
D. Jones, Carmarthen (*accepted*)	2,099 0 0

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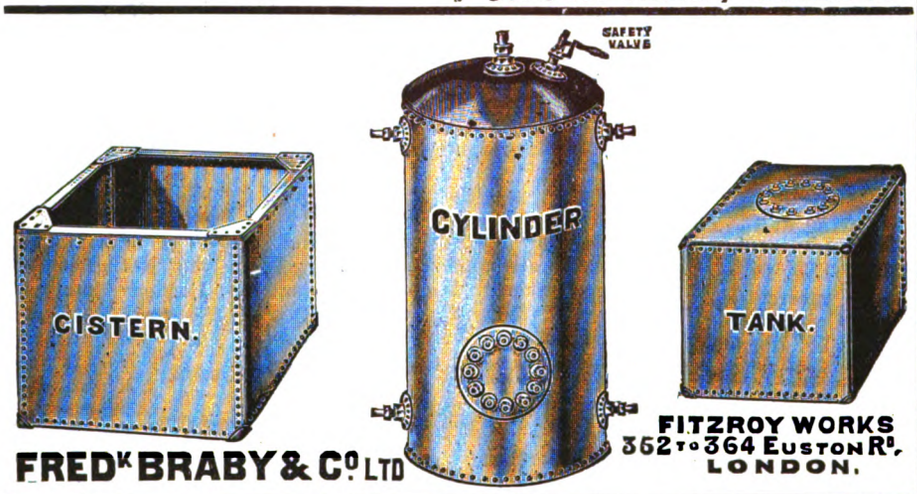
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DISTRICT SURVEYORS' FEES AND L.C.C. SCHOOL BUILDINGS.

The Education Committee of the London County Council presented the following report at the meeting of the Council on Tuesday, the 30th ult.:—

We have had under consideration the question of the right of the district surveyors under the London Building Acts to claim fees under those Acts in reference to works carried out in connection with the Council's school buildings, which the Council contend are exempt from Parts VI. and VII. of the Acts. In regard to new buildings, it has been decided by the High Court that, having regard to the provisions of section 3 of the Education (Administrative Provisions) Act, 1911, such buildings are exempt from the provisions of the Building Acts, including provisions as to giving notice to the district surveyor and payment of fees to him. But alterations to existing buildings do not come within the exemption conferred by the said section.

Having regard, however, to the decided cases, it is questionable whether the district surveyors can substantiate a claim in cases in which only constructional matters are involved, such matters being dealt with by Parts VI. and VII. of the Act of 1894, from which exemption is claimed, and we accordingly instructed the solicitor to take the necessary action to resist the claim of the district surveyor in connection with the work of remodelling the Southwark Park school (Rotherhithe). In that case the district surveyor took out a summons against the Council's contractors, Messrs. Akers & Co., Ltd., for fees amounting to £7 6s. 3d., and the magistrate (Mr. Gill) upheld the district surveyor's claim.

We are advised that the correctness of the magistrate's decision is open to question, and in view of the importance of the matter, we are of opinion that the necessary steps should be taken to appeal against the magistrate's decision. Provision for the expenditure has been made in vote No. 45 of the annual maintenance votes, 1914-15. We recommend:—

"That the Council do appeal to the High Court against the decision of the magistrate in the matter of the summons issued by the district surveyor against Messrs. Akers & Co., Ltd., contractors for the remodelling of the 'Southwark Park' L.C.C. school (Rotherhithe), for fees in respect of alleged supervision of the work in question."

TREASURE TROVE IN THE CITY.

In his annual report, Dr. Waldo, J.P., the Coroner of the City of London, has the following interesting reference to certain treasure trove and its bearing on the rights of his office:—

"I may call the attention of your Corporation to a matter which concerns somewhat closely the duties of my office. From the circumstances of the case it is at present impossible to lay before you the precise facts. The matter to which I allude is the alleged discovery of treasure trove at some place within the City boundaries at a date that appears to have been within the last three or four years. The articles there found are deposited, so I learn, in the London Museum, Lancaster House, St. James's, S.W. They consist of a hoard of Elizabethan or Jacobean jewellery. So far as can be gathered, the trove has been secured by the Treasury by a secret arrangement with a certain person or persons, and no reference has apparently been made to the Coroner of the district in which it was found, whether that district be in the City or elsewhere. According to ancient law and custom, 'It is the duty of every person who finds any treasure, or has knowledge that any treasure has been found, to make it known to the Coroner of the district.' Further, in my opinion it is the bounden duty of the Coroner to call a jury and hold an inquest upon the alleged treasure trove. In the particular case of the trove recently placed in the London Museum, I have to report to your Corporation that presumably the treasure has been removed from the City by the Treasury without reference to my jurisdiction as his Majesty's Coroner for the City of London and your officer. The very fact that I am unable to give more exact description of the alleged secret removal of treasure trove in itself suggests the desire to avoid public inquisition. It seems fairly obvious that the interests of the public demand in such cases a judicial inquiry on oath to ascertain as far as may be the facts regarding the finding and other issues involved in the unearthing of a quantity of valuable property. The motives of the Treasury in securing objects of antiquarian and historical value are no doubt admirable. It remains for your Corporation, however, to determine whether any action should be taken to defend the jurisdiction of your Coroner's Court against what may possibly prove on further inquiry to have been an evasion of the law, and one that, in some cases, might conceivably lead to grave abuses as regards hidden articles. The right of inquiry under such circumstances was originally assigned to the Coroner by Edward I. It was by him enacted in the year 1276 'that a Coroner ought to inquire of the treasure that is found, who were the finders, and, likewise, who is suspected of it.' This duty was reimposed in Section 36 of the Coroner's Act of 1887, and is still in force. I have thought it my duty to report this matter to the Corporation on what may possibly prove on further investigation to have constituted an illegal encroachment by the Treasury upon the jurisdiction of the Coroner. A formal inquiry from your Corporation might perhaps elicit from the Treasury a precise statement as to the facts of the case."

CORRESPONDENCE.

[*The Editor will not be responsible for the opinions expressed by Correspondents.*]

To Capture the Enemy Trade.

Sir,—During the last fifteen years I have probably seen on an average one man a day who has called as an agent for a building material, and I have been forced to notice that, with a few brilliant exceptions, our own men's training is very inferior to the German's. The majority of English travellers appear to have no technical knowledge beyond a few elementary points relating to their own goods. I feel sure that for this reason the sales of many home-made materials have suffered while inferior imitations from the Continent, &c., have been introduced with greater skill. The present seems to me the great opportunity to put this right. Manufacturers are keenly alive to the position, consumers are anxious to use British goods. There will be a big demand for trained men to bring the two classes together. I suggest that architects' assistants with no prospects of a practice might make good use of their experience in this field, and parents who are undecided about their sons' (and possibly daughters') careers should not leave it out of their reckoning. The necessary training might be got by spending, say, two years with an architect or builder, or perhaps the technical schools would arrange a special course. No doubt the present defect is due to the fact that, so far as I know, no opportunity has been given to travellers to learn their business. This might be overcome by those who wish to make themselves efficient attending a school three or four evenings a week if the arrangements could be made.—Yours, &c.,

S. B. K. Caulfield.

23 Old Buildings, Lincoln's Inn: April 7, 1915.

GLASSWARE TO GIVE SUNLIGHT COLOUR VALUE WITH INCANDESCENT ELECTRIC LAMPS.

In response to a number of inquiries for glassware which will ensure artificial light of daylight value the British Thomson-Houston Co., Ltd., are putting on the market a most complete range of colour matching pendants and globes. The name "Trutint" has been given to this glassware, and it is available in various compositions to ensure different sunlight values. For instance, it is manufactured in three groups as under:

Group 1. The composition of the glass is such as to ensure the most accurate matching in colour comparison work. This particular unit is not for general room lighting, but is only available as a pendant reflector unit, without cabinet, for use where there is little extraneous light to interfere with colour matching.

Group 2 is for general illumination, and gives a light of "noon" sunlight value, and is particularly suitable for general lighting in paint shops, lithographic plants, art galleries, &c. The "noon" sunlight globe is made of clear Trutint glass sand-blasted inside, and ensures a light corresponding to noon sunlight. The watts per candle efficiency of Mazda half-watt lamps when fitted with this particular type of globe is practically equivalent to standard Mazda lamps in a white opal globe.

Group 3 is also for general illumination and ensures a light of "afternoon" sunlight value. The purpose of the Trutint globes in this case is to furnish a light that is slightly more efficient in watts per candle than in Group 2,

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Don't run away with the idea that economy necessarily means self-denial. As I see it, true economy means obtaining the same or a better article at a lower cost. Let us take lighting as a case in point. The unwise economise by using only some of their lamps—what they gain one way they lose another; they deny themselves comfort and cheer. Those who *know*, use me. Theirs is the true economy as they obtain full benefits—plenty of light (as much, if not more, than they had before)—lasting strength—and what users are really seeking: lower lighting bills. Drawn wire is responsible for all these advantages, and I first brought it out—I'm Mazda.

The British Thomson-Houston Co., Ltd.,
Mazda House, 77, Upper Thames St., London, E.C.
Branches: Manchester, Birmingham, Leeds, Sheffield, Newcastle, Middlesbrough, Glasgow, Swansea, Cardiff and Dublin.

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and necessarily somewhat yellower, as is the case with afternoon sunlight. The Trutint globes in this group, therefore, compromise between colour and efficiency, and its field will be found in the general lighting of dry goods and clothing shops, or in other positions where daylight quality of light is desired. The globes in this group are made of Trutint glass cased over by a light opal, or a very light opal body in which Trutint has been mixed, and are known respectively as "Trutint cased" and "Trutint opal." The cased glass appears white when unlighted, while the other units appear bluish. When possible complete installations of Trutint glass should be obtained, so that the yellow light of other lamps be not present.

As will be readily understood, the production of a glass to ensure daylight lighting values has been a lengthy and exhausting one, and the British Thomson-Houston Co., Ltd., are to be congratulated on being in a position to place such desirable glassware into the hands of light users who rely on perfect colour matching. Photographers, colour printers, drapers, paper manufacturers, wall paper manufacturers, dyers, cigar manufacturers, button manufacturers, chemists, diagnosticians of skin diseases, artists, &c., will doubtless find much value to them in this glassware, as when Mazda half-watt lamps are equipped with Trutint delicate colour matching can be proceeded with for the whole twenty-four hours of the day if necessary, and there is no need for further reliance to be placed on a fickle climate.

Trutint glassware is not made for use with ordinary Mazda lamps. It has been specially compounded for Mazda half-watt lamps, which, owing to their high intrinsic brilliancy, are more like sunlight in colour than previous incandescent lamps. Further particulars of Trutint glassware can be obtained from the British Thomson-Houston Co., Ltd., Mazda House, 77 Upper Thames Street, London, E.C.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 2,094. July 27, 1914.—H. B. Bateman, 38 Westmoreland Road, Bayswater, W. Interior automatic fire escape or other ladder and burglar-proof trap.

2,726. Feb. 2, 1914.—H. H. Cockburn, Binscarth, Manitoba. Fire-extinguishing apparatus.

4,721. Feb. 24, 1914.—John Adamson, 31 Rosedale Road, Higher Tranmere, Birkenhead. Cramp for supporting the sheet used in applying concrete.

5,354. March 2, 1914.—Louis Cadenal, 7 rue de Tracy, Paris. Electrically controlled locks.

5,678. March 6, 1914.—John Rushworth & Sons, Victoria Works, Town Street, Rawdon, near Leeds. Window-sash fasteners.

7,498. March 25, 1914.—F. W. Adams, 82 High Road, Felixstowe, Suffolk, and H. M. Cantley, Swan's Nest, Westfield, Ipswich. Reversible casements and stays for same.

10,179. April 24, 1914.—John Ferguson, 37 Gloucester Road, Finsbury Park. Reinforced-concrete beams, slabs, and blocks, and lintels and fire-resisting floors and the like constructed therewith.

10,439. April 28, 1914.—Geo. Anderton, Licentiate R.I.B.A., architect and surveyor, 55 Cross Street, Manchester. Fireproof floors.

10,757.—May 1, 1914.—Richmond Gas Stove and Meter Company, Ltd., Academy Street, Warrington, Lancs., J. A. Ransome, "Shirley," Hill Cliffe, Warrington, and J. R. Burnett, Ashmore, Red Lane, Appleton, Lancs. Gas fire or stove or like gas-discharge conduit.

12,159. May 16, 1914.—Alexandre Laffly, 103 Long Acre, E.C. Vehicles for road watering and other purposes.

12,726. May 23, 1914.—James Allen, sen., & Son, Ltd., and H. W. Allen, Elmbank Foundry, 12 Possil Road, Glasgow. Bath.

13,465. June 2, 1914.—W. E. Shore, 252 West 54th Street, New York. Means for heating air for domestic stoves or ranges.

14,181. June 12, 1914.—Dated under International Convention Oct. 9, 1913. A. G. Paul, 622 Warren Street, Boston, Suffolk, Mass., U.S.A. Heating systems and methods of distributing heating fluids.

17,561. July 24, 1914.—W. G. Shipwright, 218 Wellmeadow Road, Catford, S.E., architect and surveyor, and F. G. Martin, 7 Compton Crescent, Sutton Court Road, Chiswick, W. Floors for building.

27,449. Nov. 28, 1913.—Dated under International Convention Nov. 28, 1912. Max Arndt, 35 Aureliusstrasse, Aachen, Germany. Arrangements for automatically controlling the passage of a heating medium in radiators of central heating installations.

18,237. Aug. 1, 1914.—A. S. Iles, the Daisy Vacuum Cleaner Company, Ltd., Gravelly Hill, Birmingham. Vacuum cleaning apparatus.

18,451. Aug. 8, 1914.—Herbert Hartley, 215 Padiham Road, Burnley, Lancs. Ball taps or float valves.

20,346.—Sept. 30, 1914.—Robert Beresford, 24 Merrial Street, Newcastle-under-Lyne, and C. F. Daly, Louisvilla, Silverdale, Staffs. Means for disinfecting water closets and the like.

10,138. April 24, 1914.—E. W. Collier, 154 Hainault Road, Leytonstone. Cartridges for fire extinguishers.

4,424. Feb. 20, 1914.—H. M. Pritchard, 11 Dumfries Place, Cardiff. Construction of doors.

8,570. April 4, 1914.—George Hall, 16 Bewick Road, Gateshead. Device for opening and closing fanlights and the like.

13,058. March 27, 1914.—W. C. Wise, c/o P. Chappuis & Co., 85 Fleet Street, E.C. Lamp reflectors.

14,071. June 11, 1914.—Elias Ruscoe, 16 Stanley Terrace, Cherry Tree, near Blackburn. Windows.

14,225. June 12, 1914 (dated under International Convention June 13, 1913).—Xaver Schon, Aarau, Aargau, Switzerland. Apparatus for cleaning or purifying used or waste oil, varnish, and paste-colours.

15,558. June 29, 1914 (dated under International Convention Feb. 18, 1914).—C. W. Blue, 57 Cortlandt Place, Cliffside, New Jersey, U.S.A. Tower derricks.

15,956. July 3, 1914 (dated under International Convention July 3, 1913).—Alice Vilain XIIII, 20 rue de Longchamps, Paris. Building bricks or blocks.

12,188. May 18, 1914.—W. H. Kemp, "Maureen," Crutchfield Avenue, Walton-on-Thames. Waterproof, dampproof enamel distemper for walls, ceilings, woodwork, iron, and the like.

2,504. Jan. 30, 1914.—H. C. Mitchell, 115 New King's Road, Fulham, S.W. Processes of drawing or illustration.

5,279. March 2, 1914.—G. E. Perham, 27 Leighton Road, West Ealing, W. Window-sash fasteners.

5,332. March 2, 1914.—H. E. White, 1,435 Kingston Avenue, Youngstown, Mahoning, Ohio, U.S.A. Expanded metal structures.

5,646. March 5, 1914.—Leonard Beeson, 20 St. Erkenwald Road, Barking, and J. L. Thurgood, 146 Selwyn Avenue, Highams Park, Chingford. Water-heating apparatus.

5,896. March 9, 1914.—C. T. L. Bristow, A.M.I.C.E., 14 St. Mary's Street, Bedford. Malleable and other step irons for manhole inspection chambers and like purposes.

6,173. March 11, 1914.—G. F. Allom, 15 George Street, Hanover Square. Electric-light reflectors.

6,371. March 13, 1914.—C. Y. Hopkins, Armoury Close, Bordesley Green, Birmingham. Catches for doors.

6,648. March 16, 1914.—The Crittall Manufacturing Company, Ltd., and W. F. Crittall, Manor Works, Braintree. Double glazing.

6,686. March 17, 1914.—T. A. Pollard, 1 St. Ames Drive, South Shire, Blackpool. Machine for cutting stone, marble, or any other masonry.

7,057. March 20, 1914.—J. G. Cracknell, 21 Whittall Street, Birmingham. Vacuum cleaner.

9,545. April 17, 1914.—A. B. Cruickshank, Chancery Lane Safe Deposit, W.C. Heat distributor for cooking purposes.

10,669. April 30, 1914.—John Shanks, Tubal Works, Barrhead, Renfrewshire. Ball cocks.

10,861. May 2, 1914.—H. J. Yates and J. F. Davy, Essex Works, Thimble Mill Lane, Aston, Birmingham. Gas burners.

13,542. June 3, 1914.—J. F. Goddard, 59 Tytherton Road, Holloway, N. Manufacture of cement.

13,737. June 6, 1914.—William Story, 15 Chapeltown Road, Leeds. Glazing roofs and like structures.

15,963. July 3, 1914.—J. L. Dubois, Balfour House, Finsbury Pavement, E.C. Ball valves for water supply.

21,092. Oct. 16, 1914.—A. E. Eilertsen, 53 Adams Avenue, Stamford, Las Animas, Conn., U.S.A. Device for flushing drains.

19,328. Sept. 1, 1914.—L. C. Miller, 260 West Broadway, New York, U.S.A. Fire alarms.

Any of the above specifications may be obtained from J. D. Roots & Co.

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VARIETIES.

THE Committee of Management have decided to proceed with the erection of a Jewish Hospital for London at Stepney Green.

WE regret to announce the death of Mr. W. H. Duffield, F.R.I.B.A., of Cloak Lane, E.C., which occurred on Maundy Thursday at his residence, "Rossmore," Beckenham, after a long and painful illness. Mr. Duffield was in his fifty-fourth year.

A DEPUTATION representing the slate industry of North Wales waited upon the authorities at the War Office last week with reference to the question of introducing slate for roofing the buildings in course of construction for the accommodation of troops of various training centres.

THE Manchester Dry Docks Company, Ltd., have decided to build another dry dock at Manchester, and have placed the contract with Messrs. Robert McAlpine & Sons, of London and Glasgow. The new dock will be 450 feet long and 65 feet wide.

UNDER the Provisional Order promoted by the Edinburgh Corporation power was sought by the Corporation to demolish houses which, having been condemned, had not been put in order. Consideration was given to the subject by the Commissioners at present conducting an inquiry in Edinburgh, and the decision of the Court is that the view taken by the Local Government Board, who objected on the ground that action should be taken under the general statutes, and not under a local Act, should prevail.

MESSRS. ERNEST BROWN & PHILLIPS will shortly exhibit at the Leicester Galleries, Leicester Square, a series of drawings and lithographs by Mr. Joseph Pennell of "London in War-time; Searchlights and Zeppelins." Mr. Pennell, on the invitation of President Wilson, will act as one of the International Jurors for the United States Section at the Panama Pacific Exposition at San Francisco.

A LOCAL Government Board inquiry was held at Sheffield last week into an application for sanction to borrow £164,373 for extension of electric light supply works, the money to be spent as follows: £86,813 for additional plant, £50,000 for sub-stations and equipment, and £27,560 for buildings at Neepsend. The extension is principally needed to meet the demands of the armament firms.

THE Glasgow Royal Technical College Architectural Craftsmen's Society have elected the following office-bearers for 1915-16: Hon. Presidents, Mr. T. L. Watson, Mr. Jas. M. Monro, Mr. Chas. Gourlay, and Mr. Alex. Davidson; President, Mr. Robert Moon; Vice-Presidents, Mr. Thos. Whyte and Mr. Peter Lyall; Joint Secretaries, Mr. Donald Dewar and Mr. Malcolm D. M'Phail; Treasurer, Mr. Thomas Davis; representative to College Committee on Architecture, Mr. W. H. Baxter.

THERE were 126 applicants for the post of borough engineer at Stockton, and the following have been selected for a personal interview: Mr. G. H. Whitaker, chief assistant surveyor, Sunderland; Mr. H. R. Crabb, borough engineer, Pembroke; Mr. F. Wilkinson, deputy surveyor, Wimbledon; Mr. G. F. Beaumont, deputy borough engineer, Wolverhampton; Mr. T. P. Frank, borough surveyor, Newark-on-Trent; and Mr. G. C. Mitchell, assistant borough engineer, Stockton. The salary is £500 a year, rising by £25 per annum increments to £700.

MR. HENRY C. WALKER, chairman and managing director of Messrs. Waygood-Otis, Ltd., was the recipient of a presentation last week from the employees of the firm, to mark the fiftieth anniversary of his association with the original business. In the course of his speech, Mr. Walker recalled that when he joined Messrs. Waygood in 1865 they had never made a lift, their principal work being water mills, coffee mills, sugar and rice mills. The first venture in lift construction resulted in such a loss that it was nearly the last. Fortunately a second and more successful trial was made and fame won.

THE Building Acts Committee of the London County Council has had under consideration the question of the appointment of a district surveyor for the district of Rotherhithe, to fill the vacancy caused by the appointment by the Council on February 16 of Mr. C. A. Daubney to the district of Bermondsey. The gross fees received in respect of the district of Rotherhithe during 1914 amounted to £327. Applications for the appointment were invited by public advertisement, and twenty-one applications were received. Two of the applicants had not obtained the necessary certificate of efficiency to perform the duties of a district surveyor. After consideration of the merits of the remaining candidates, seven of whom have been seen by the committee, it was decided to recommend the appointment of Mr. Joseph Edward Mundell. In compliance with standing order the names of three candidates were submitted as follows: Mr. J. E. Mundell, Mr. J. Dovaston, Mr. F. P. Watson.

IT was reported at the last meeting of the Rhyl Town Council that plans for a promenade pier had been prepared by the surveyor, but they had had to be amended as the Local Government Board objected to ferro concrete work, and steel had to be substituted. The original estimated cost was £3,100, but in consequence of the alteration and the increased cost of material it was now £4,300. The Office of Woods and Forests had written stating that they were quite satisfied with the scheme. It was decided to apply to the Local Government Board for the loan.

AN effort is being made to get the Treasury to remove their interdict against capital expenditure by municipalities so far as to allow the Manchester Corporation to proceed with the erection of the new electricity generating station at Barton. As the scheme was planned the first portion of the works, which will cost £135,350, was to have been completed by March of next year. The Electricity Committee contend that it is in the public interest that the work should proceed.

THE General Purposes Committee of the City Corporation are recommending that body to expend a sum of £5,745 on the redecoration of the Egyptian Hall, the State Drawing Rooms, the Old Ball Room, the three State bedrooms, and the Venetian Parlour at the Mansion House. There is, say the committee, a unanimous opinion that the redecoration should be proceeded with at once. "We feel it is our duty to look forward to the time when this lamentable war shall have ceased, and peace once more reign in these realms—when, as the capital of the Empire, the City of London will, of necessity, in accordance with precedence and its ancient rights and privileges, take the foremost part in the rejoicings that will follow. At that time the Mansion House will, as the official residence of the Lord Mayor, be much in demand for the numerous functions that will then be held, and therefore we suggest that your Honourable Court should now authorise your committee to proceed with the work by arrangement with the Lord Mayor." It is proposed to spread the cost over a term of five years.

THE Newcastle operative plumbers, who came out on strike a week ago for an increase of wages, resumed work on the 6th inst. The dispute was referred to the Committee on Production, who appointed Mr. Alexander Wilkie, M.P., secretary of the National Shipwrights' Society, and Mr. John Hill, secretary of the National Boilermakers' Society, to interview the men and state the inadvisability of industrial disputes at the present juncture of national affairs. Mr. W. J. Robson, secretary of the Newcastle and Gateshead Master Plumbers' Association, has issued the following statement: "This dispute originated in a demand from the operatives for 1*d.* an hour advance in wages. The masters offered 2*s.* per week special war bonus, or, failing acceptance, the whole matter to be referred to arbitration, the arbitrator to be appointed by the Board of Trade. This recommendation of the masters was in harmony with the proposals for the avoidance of stoppages of work at this juncture issued by the Committee on Production, under the chairmanship of Sir George Askwith, and which proposals were agreed to by the men's representatives. The men not only refused the 2*s.* war bonus, but rejected arbitration, thus ignoring the most important clause in the conditions assented to by their own representatives. It was because of the neglect of the men to avail themselves of the opportunities provided by the Government for the settlement of disputes without stoppages of work that the masters refused to countenance any sectional return to work, taking their stand upon the proposals as a whole. The masters believed that in view of the 'Memorandum of Proposals' nothing justified a strike in these times, hence their expressed willingness all along to accept the decision of an arbitrator. The offer of the operatives for a sectional return to work to accelerate Government work the masters felt obliged to reject, for the reason that this meant the application of just so much of the 'Memorandum of Proposals' as suited their case and was still tantamount to a refusal to arbitrate."

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, April 16.

Town Planning Institute : Paper entitled "Replanning and Redevelopment in Existing Centres," by Mr. W. T. Lancashire, M.I.C.E., and Mr. H. V. Lanchester, F.R.I.B.A., at 8 P.M.

Monday, April 18.

Royal Institute of British Architects : Paper entitled "The Design and Construction of Buildings for Industrial Purposes," by Mr. Segar Owen, F.R.I.B.A., 8 P.M.

Tuesday, April 19.

Royal Institution : Paper entitled "The War on Rheims Architecture," by Mr. Banister F. Fletcher, F.R.I.B.A., at 3 P.M.

Wednesday, April 20.

Edinburgh Architectural Association : Annual Business Meeting and President's Address, at 8 P.M.

Thursday, April 21.

Concrete Institute : Paper entitled "The Stability of Quay Walls on Earth Foundations," by Mr. F. E. Wentworth-Shields, M.I.C.E., at 7.30 P.M.

MONUMENTAL BRASSES.

Of the collateral branches in the study of Mediæval art and craftsmanship few are of more general interest than that of monumental brasses; for these not only afford examples of exquisite design and workmanship, but throw light upon the life of past ages, and particularly furnish us with valuable records of costume—clerical, military, and domestic. All classes of the community are represented on memorial brasses. We see upon them, delineated with accuracy though to some extent conventionalised, in their habit as they lived, not only our nobles and knights and bishops, but also the franklin, the yeoman, the merchant, the mechanic, the servant, the parish priest, the monk, the student, and the schoolboy. In fact, it is as memorials of middle-class and commonplace life that brasses possess their greatest importance. The vast majority of persons pictured and commemorated by them are the possessors of names absolutely unknown to history, of whom without their brasses we should have known nothing.

In respect of costume, brasses give us a complete pictorial history of the use and development of armour, civil dress, and ecclesiastical vestments from the thirteenth to the end of the seventeenth century; the fighting men of the Crusades, the conquerors of Wales and Scotland, the heroes of Crécy, Poitiers, and Agincourt, the rivals of St. Albans, Barnet, and Bosworth; ecclesiastics of every grade, and their successors the professors, lecturers, and divines of the Reformation; the middle-class representatives of commerce and trade, woolstaplers, brewers, glovers, salters, and so forth; civic and legal dignitaries—mayors, aldermen, judges, notaries.

As an aid to the study of heraldry brasses are of considerable value, though, as the tinctures are not always represented in the engraving and colour is not, for the most part, existent, the herald derives less advantage than does the student of costume, save in the special direction of merchants' marks, a branch of heraldry in which the records of brasses are of special value.

The inscriptions which usually accompany the engraved effigies are of peculiar value to the student of archæology. They form the key to the chronology of art, and give invaluable aid in fixing the date of many works of painting, sculpture, enamelling, or metal-working. Brasses, in fact, are almost the only dated Mediæval works of art. In themselves, too, these inscriptions are of value to the palæographer and to the philologist, as well as to the collector of epitaphs.

As a field for a collector's hobby, the great number of still remaining brasses affords a splendid hunting ground for the specialist. With something like 8,000 known and recorded examples, the whole field is too large for any individual, and it is open to a collector to restrict his investigation to any one of many different details—sword-hilts, baldricks, separate pieces of armour, ladies' head-dresses, girdles, pendants, &c., or of maces, the apparels of albs, morses, the orphreys of copes, bishops' mitres, croziers, and other insignia.

The popularity of brasses as memorials of the departed arose probably from two especial reasons—their relative inexpensiveness and their superior durability to the older forms of stone-incised slabs and Limoges enamels. The latter certainly accounts for the greater number in which memorial brasses remain to that of incised slabs, even if these latter ever predominated, or were even equal in the frequency of their employment.

Incised slabs were certainly the older form, for crosses were at an early date incised, more especially upon coffin lids, and were followed during the twelfth century, both in England and on the Continent, by effigies. In the fourteenth century brasses almost superseded them in England, though in Germany, France, and Flanders the incised slabs still held their ground. Even in England they lingered on, and occasional examples may be found of each of the principal classes of effigies—ecclesiastics, men in armour, ladies, and civilians—throughout the fourteenth, fifteenth, and sixteenth centuries, until in the seventeenth and later centuries the incised slab became supreme, partly owing to the decadence, no doubt, in the quality of later brasses.

For it is a noteworthy fact that the earliest brasses are the finest and best, alike in boldness of design, in accuracy of workmanship, and in excellence of material. The engraved plates are of great weight and thickness, so that it is not only not uncommon, but even usual, for the oldest examples to be now in a far better state of preservation than those which were laid down hundreds of years later.

Limoges enamels came into use in France and Western Europe generally about the twelfth century, and therefore shortly before the age of brasses. Such memorials were always of small size on account of their costliness, which must have been considerable, and they are very rare. But it is due to their influence that colouring matter was frequently used in connection with brasses, especially with their armorial details and in isolated shields of arms. But plaster, resin, wax, or some other substitute was generally used instead of enamel, and has almost invariably perished in the lapse of time, so that, as we said in referring to heraldry, colour is usually now non-existent. Examples of actual

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WROUGHT-IRON GATES AT MILTON HALL, NEAR PETERBOROUGH.

enamel, nevertheless, do sometimes occur, as in the case of the earliest known brass in England—that of Sir John Daubernoun, 1277, which is still preserved in the chancel of Stoke d'Abernon Church, in Surrey.

In the earliest brasses the figures are usually life-size and cut from very thick plates of metal. The drawing is bold and unconventional; there is an entire absence of shading, and the lines are deeply incised. The inscription is set around the border of the slab, and its Lombardo-Uncial letters are made from separate pieces of metal, each set in its own matrix. In the reign of Edward II. canopies are first introduced. They are of simple design, and when used the figures are generally rather less than life-size.

From the first quarter to the end of the fourteenth century brasses attain their greatest magnificence and variety, and all orders of the realm have their representatives. The figures are of all sizes from a foot or so upwards. The language of the inscriptions is often Norman-French. During the fifteenth century the figures become smaller, and deterioration in the quality of the engraving becomes evident in the latter half of the century, when, also, shading in the form of cross-hatching began to be used.

During the Tudor period brasses are numerous, but drawings and engraving declined in quality and the use of shading increased. In the Elizabethan and Jacobean period the art of memorial brasses was very much debased. Thin plates of cheap metal were used and the lines are spoilt by an excess of shading. Deterioration continued, and by 1642 the art and craft of the memorial brassworker became almost extinct. The latest example, commemorating Benjamin Greenwood, 1773, at St. Mary Cray, Kent, is of a most degraded type, and might have been merely scratched upon the metal.

Thus from 1277 to 1773, a period of 500 years, memorial brasses passed through the whole cycle of development, from admirable and forceful work, through richness and luxuriance, to final decay, until their resuscitation during the Gothic revival of the nineteenth century.

For those who would take up the fascinating study of memorial brasses, either as a whole or in its various branches, we can recommend as a most helpful guide Mr. Macklin's little book* on "Monumental Brasses," a standard work for twenty years and now in its sixth edition. Not the least valuable features of this book as a primer are the excellent bibliography and the list of nearly 4,000 brasses arranged in lists under the various counties of England and Wales.

NOTES AND COMMENTS.

THE particulars of the competition for designs for ambulance bodies to fit a definite chassis, which closes on June 30, are now slightly modified with regard to testing and proprietorship of the winning designs. The essential paragraphs of the revised conditions are as follows:—

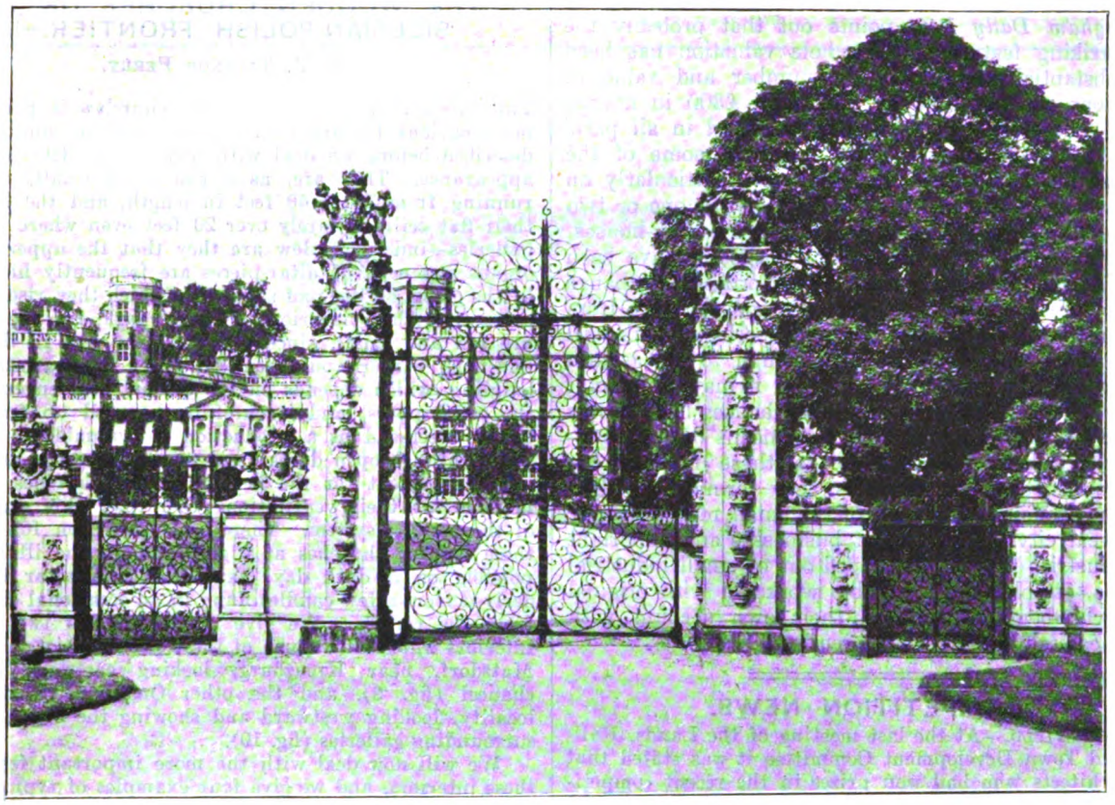
The Commission, in order to form an opinion of the merits of the several designs sent in, may apply any test it thinks fit, and may cause bodies to be built to the designs of competitors, and may try these in actual practice. The drawings must be made in such a way that the body can be built from them.

The object of the Commission is to improve the existing types of ambulance bodies, and to produce, if possible, a standard pattern body of perfect design which shall fit standard chassis. Apart from the prizes, there will be no payment made for designs. The Commission may, if it approve of the latter, publish them in some form or other, provided there is no objection on the part of the designers. They can then be used in the cause of humanity. It is Mr. Wellcome's intention, with the consent of the designers, eventually to publish, in a suitable and illustrated form, under the auspices of the Wellcome Bureau of Scientific Research, such material and information as the Commission may deem worthy of being preserved as a permanent record.

To widen the circle of actual voters in any constituency is good policy, and so we may regard the innovation adopted by the Council of the Royal Academy in the

* *Monumental Brasses.* Together with a selected bibliography and county lists of brasses remaining in the churches of the United Kingdom. By the Rev. Herbert W. Macklin, M.A., President of the Monumental Brass Society, Rector of Houghton Conquest, Beds. (London: George Allen & Co., Ltd. 3*s.* 6*d.* net.)

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ENTRANCE GATES AT CASTLE ASHBY, NORTHANTS.

election of Associates. Hitherto only those present on the night of an election were entitled to take part in the selection of candidates, whose names were to be placed on the blackboard prior to the final ordeal by ballot. In future, however, the list of candidates will be sent by post to Academicians and Associates, who will then indicate the applicants whose names should, in their opinion, be chalked on the board. In addition to this change it has also been decided that the election of Associates will henceforward take place on Varnishing Day, when all the members and Associates who can possibly go to Burlington House are to be found there, so that in future a good attendance at elections will be ensured.

We are not surprised that the policy of the Government in restricting building is now beginning to pinch those who have the votes, and their objections may possibly receive more attention than the misfortunes of professional men whose work depends upon building activity.

The trade unions in the Glasgow building trade are offering strong opposition to the Corporation's acceptance of the Local Government Board's advice to restrain public work until after the war. Their officials, at a conference with the Labour group, argued that it should not apply to the building trades, which were now practically depending on public bodies for employment. It was stated that the stoppage of Corporation building work would throw 500 joiners out of employment, and would affect other trades proportionately. Of 400 plasterers in the city 100 have enlisted, and of the remainder 25 per cent. are unemployed. According to the unions 75 per cent. of the building work carried on by private enterprise has been stopped by the war, and consequently a crisis will be reached if the Corporation do not proceed with the building schemes as approved. It is also stated that the masons remaining at the trade are unfitted for military service, either on account of age or physical disability, and the same, it is added, applies to other trades concerned. The Corporation will be asked to receive a deputation on the subject, and representations will also be made to the Local Government Board with a view to work being continued in the building line.

The underground water of London has again demonstrated its presence and its potency. In Calthorpe Street, Clerkenwell, which runs at the side of Mount Pleasant Post Office, without any warning a stretch of the pathway, 12 ft. long, and about 50 square yards of the roadway collapsed into a huge cavity 20 ft. deep.

The subsidence was preceded by a remarkable accident in the new post office tube, the construction of which has recently been started.

The tube, after leaving the post office, runs under the centre of the road, at a depth of between 40 ft. and 60 ft. Ten men were working in the head shield, cutting their way through the earth, when water began to ooze through upon them. For a while they tried to caulk it up with boarding, but the tiny streams of water gradually gained in volume, and at length the men had to run for their lives. They all reached the "skip" in safety, but the last man had scarcely got in when there was a tremendous rush of water. Thousands of gallons poured in, and as the men were drawn up, the water rose under them. In a very short time the tube was full of water, but it ceased to rise before reaching the street level. In view of the fact that the course of the old Fleet River is known to be in the neighbourhood, it is considered that this once famous City stream, or a tributary, was tapped.

It would, however, be premature to say that it is the Fleet which has been tapped, for there are other possibilities. The clay on which London stands—as distinguished from the "London clay"—is honeycombed by numerous streams, now of small depth for the most part but of considerable width. Within a quarter of a mile of the scene of the trouble is old Sadler's Wells Theatre, once a spa. Two hundred yards in another direction is the Bagnigge Wells Tavern. London is full of such springs. Undoubtedly the River Fleet does run somewhere underneath King's Cross Road, not far from Mount Pleasant Post Office.

The quinquennial valuation furnishes important information to town-planners who are able to consider facts and figures rather than dreams and ideals. A

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notable instance of this occurs in Birmingham, where the *Birmingham Daily Post* points out that probably the most striking feature of the whole valuation has been the substantial increase in the number and value of workshops ranging between £100 and £300 in annual value. These, it appears, are to be found in all parts of the city, even on the outer fringe of some of the suburbs; but they have increased more particularly on the outskirts of the jewellery district and in one or two districts like Balsall Heath, where old dwelling-houses, no longer to be let for residential purposes, have been turned to manufacturing uses. This process of change may not be unworthy of a moment's consideration from enthusiastic town-planners, who may perhaps think well to note that, whereas it is easy enough to set aside a specified area for residential purposes, it may be difficult to keep it purely residential after the houses have grown old, the city has extended, and new means of communication have been opened up. In these matters the pressure of economic forces is very formidable. Birmingham remains the home of the small manufacturer, the typical city wherein great businesses and important new industries may be developed out of small industrial concerns, established by capable workmen with original ideas, who begin trading on their own account with modest capital, in makeshift premises.

COMPETITION NEWS.

MACCLESFIELD.—At the last meeting of the Lands, Railways and Town Development Committee it was stated that both architects who had won prizes in the recent competition (mentioned in these columns a short time ago) had secured the consent of builders to bind themselves to June 1 to erect houses for the Corporation for £180 each, though it was not proposed to go on with the scheme at present owing to the financial position.

ROSYTH.—The Scottish National Housing Co., Ltd., are about to erect 150 houses to yield rents from £16 to £25, and will consider sketch plans submitted not later than 21st inst. Particulars may be had from Mr. D. W. Deas, Secretary, 63 Frederick Street, Edinburgh.

ST. HELENS.—In connection with the competition for the proposed police buildings, fire station, and court rooms, the following awards have been made: (1) Mr. Joseph Surlight, St. Ann's Square, Manchester; (2) Messrs. Clealand & Hayward, Wolverhampton; (3) Messrs. C. T. Adshead & Percy H. Topham, St. Ann's Square, Manchester. Thirty-four sets of plans were submitted. The whole of the designs will be exhibited in the Assembly Room at the Town Hall, for inspection by the competitors, on the 29th and 30th instant and May 1, from 9 A.M. to 5.30 P.M. A public exhibition will follow.

WHITEHAVEN.—In consideration of the following undertaking as to the proposed housing scheme competition contained in a letter from the town clerk of Whitehaven, dated March 30, 1915—"With regard to the appointment of the author of the design placed first as architect of the buildings, the intention of my committee has always been that the successful designer should be the architect unless there was some objection to this being so"—the Competitions Committee of the Royal Institute of British Architects desire to withdraw their warning to members against this competition.

ILLUSTRATIONS.

WINDOWS IN BEDDINGTON CHURCH AND ST. BARNABAS CHURCH, MITCHAM.

THE illustrations are from coloured sketches from the memorial windows recently placed in the new nave dormers of St. Mary's Church, Beddington, Surrey, and a photograph of the figure of "Faith" from the baptistery window in St. Barnabas Church, Mitcham. The whole of the windows are the work of Mr. P. E. Demain-Hammond. The architect is Mr. Burke Downing, F.R.I.B.A.

"WOODCLOSE," STEVENAGE, HERTS.

THIS house has been erected by Messrs. Shrouder & Matthews, of Stevenage, builders, from the designs and under the superintendence of Mr. Allen Foxley, B.A.Cantab., architect.

THE WOODEN CHURCHES OF THE SILESIAN-POLISH FRONTIER.—II.

By J. TAVENOR PERRY.

THE interior of these remarkable churches is perhaps the most curious feature of their architecture, and must be described before we deal with any of the details of their appearance. They are, as a rule, very small, the naves running from 30 to 40 feet in length, and the height of their flat ceilings rarely over 20 feet even where there are galleries—indeed, so low are they that the upper parts of organs and even of altar-pieces are frequently half-hidden in the gloom of the roof space into which they rise. At the same time these interiors are very dark, for the windows are few and small, since a large glass area in the severe and long winter would tend to lower the warmth of the building, which depends on the animal heat engendered by the worshippers, and is carefully hoarded up from week-end to week-end as a production too valuable to be dissipated through open doors; and, needless to say, as there is no arrangement for the heating of the churches, so there is none for their ventilation other than this crude form of the *plenum* system. There is no provision for lighting these country churches at night, and all the illumination possible on a dark day, save from the altar lights, is derived from a few candles hung in an occasional chandelier from the ceiling. We give illustrations of two of these interiors which show some of these peculiarities, the one of Matzdorf, near Kreuzburg, looking eastward into the chancel (fig. 9), and the other Omechau, in the same locality, looking westward and showing the organ and the surrounding galleries (fig. 10).

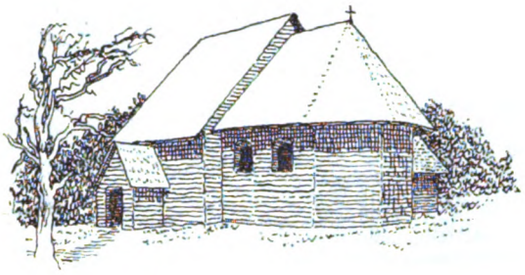
We will now deal with the more important features of these interiors, and we give four examples of typical plans, to which we shall have to refer in the course of our description. These are the pilgrimage church of St. Rochus at Gross-Doebern, a few miles north-west of Oppeln (fig. 11), and three of an important group of churches near Rosenberg, also in the neighbourhood of Oppeln, but nearer the frontier—Alt-Rosenberg (fig. 12), and the pilgrimage churches of St. Anna (fig. 13) and St. Rochus (fig. 14).

Although a large proportion of the churches are in Catholic hands, there is not much to distinguish between them and those remaining to the Lutherans in the general arrangements of the interiors, and no distinction is made in the following descriptions. The small chancels almost always, though not invariably, terminate in a three-sided apse; and some attempt is made at their junction with the nave to give a distinctive treatment suggesting the form of a chancel arch. Although as a rule the ceilings of the chancels are flat like those of the nave, in very many cases where their reredos requires it the ceiling is coved or, as in the case of Matzdorf, boarded to a trefoil shape. The want of height in the buildings precludes any raising of the chancel floor, and the two or three steps there are are confined to the altar and its railed enclosure.

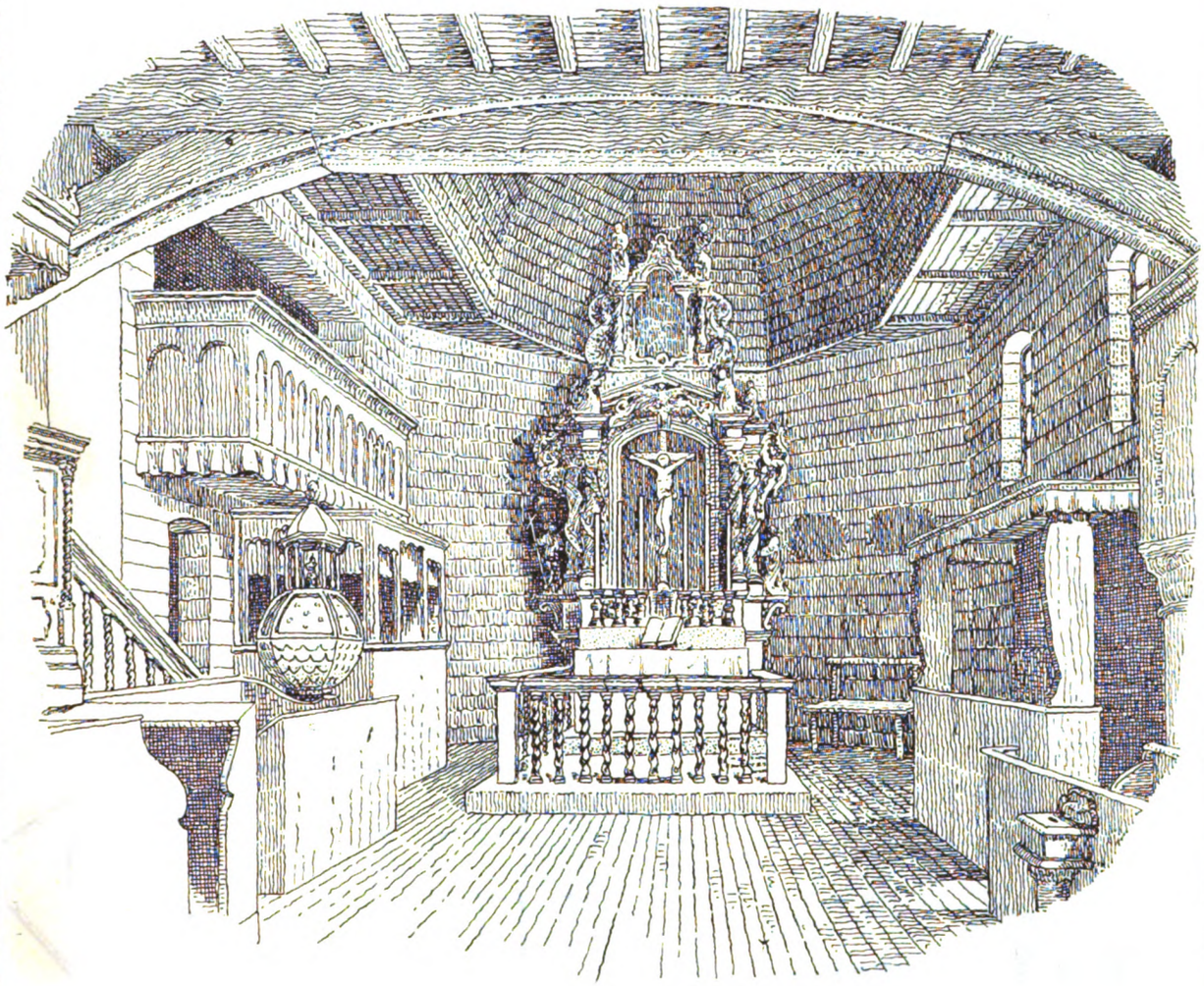
Many of the altars and altar-pieces are of a late and fantastic Gothic form, and have been at one time richly decorated with painting and gilding, one such showing in our view of Matzdorf; but the altar enclosures are curiously small, the space being generally square and little wider than the altar itself. The rood beam, surmounted by a crucifix, remains sometimes across the chancel a little in advance of the altar, but this is comparatively rare. One of the important features of most chancels are the pew or pews of the patron or lord of the manor and of other important personages in the parish. Where, as is often the case, there is a sacristy to the south or north of the chancel, the lord's pew is placed over that, with its independent staircase either within or outside the building; and the other pews have their importance marked by canopied tops. There are two such pews in the chancel of Matzdorf, and the lord's pew over the sacristy has a balcony projecting in front of it.

Two other pieces of church furniture are either placed within or in close contiguity to the chancel—the font and the pulpit—and both appear in the sketches of Matzdorf and Omechau. The fonts are all late in character and of stone, made in the form of octagonal and hexagonal bowls mounted on baluster shafts, and bedizened, if not decorated, with colour, and all are provided with ornamental wooden covers. The pulpits, with their staircases and sounding-boards or canopies, are generally very elaborate in their decorations, either of painting or carving, and provided with a great many coloured and embroidered hangings, and

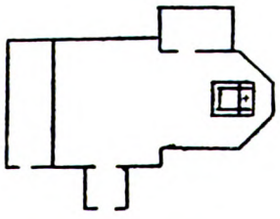
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EXTERIOR FROM THE S.E.



INTERIOR OF EAST END



SKETCH PLAN NO SCALE

FIG. 9.—MATZDORF BY KREUZBURG, SILESIA.

doing much, with the framed pictures and funeral wreaths hanging on the walls, to give a picturesque effect to the interior.

The naves of the churches have almost invariably a large western gallery, as can be seen from our several plans, and frequently shallow side galleries as well, as at Omechau. In these western galleries are placed the organs, generally much too tall to stand under the nave ceiling, so that the open ends of the pipes are hidden within the dark roof space and help to ventilate somewhat the church below—much as the

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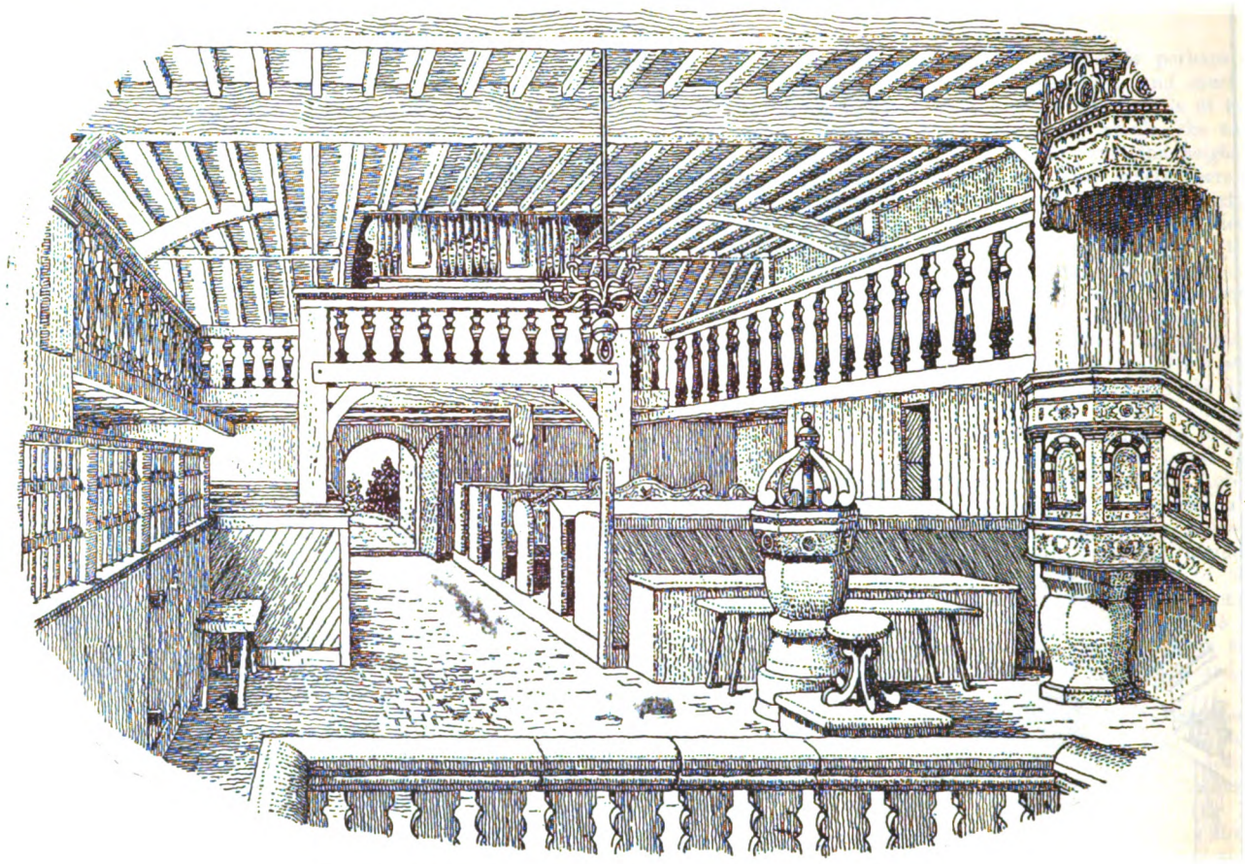
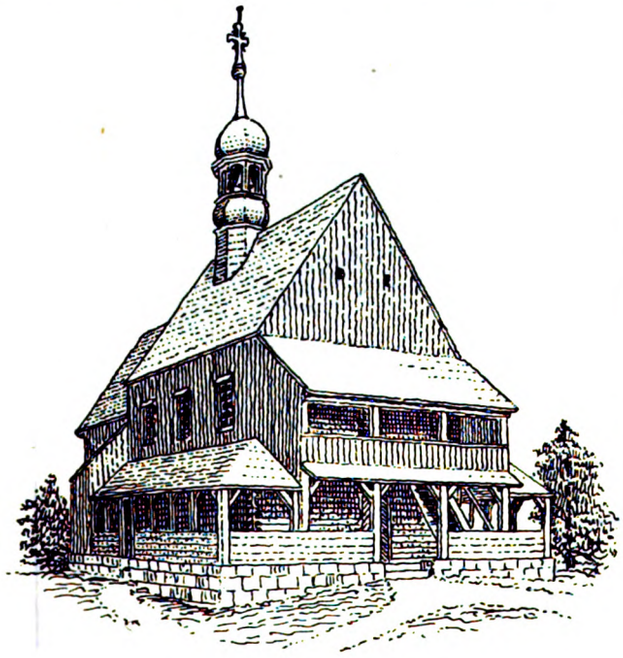


Fig. 10.—OMECHAU BY KREUZBURG, SILESIA.—INTERIOR.

organ of Rochester Cathedral, when the bellows and pumping machinery were in the crypt, distributed the damp, cold air, laden with the dust of ancestors and centuries, over the heads of the choir. These galleries were approached by



GROSS-DOEBERN
BY OPPELN
Fig. 11.

step-ladders, sometimes inside and sometimes outside the churches, and the gallery fronts were generally formed by open planks cut with a baluster outline, while the supporting posts were often turned and carved in an elaborate manner. Another feature to which a certain amount of ornamentation is given is the doorway, although none of them can for a moment compare with the elaborately carved doorways of Scandinavia. The treatment is exceedingly simple and suitable to the material, and the sketches we give on fig. 15 may be taken as fair samples of this class of work.

Such were the arrangements of these snug but gloomy churches, producing an effect without parallel in the ecclesiology of any country; and before ending our description of them we will give some short historical account, so far as any available records remain, of the examples we have illustrated, and some further notes on the disposition of their parts.

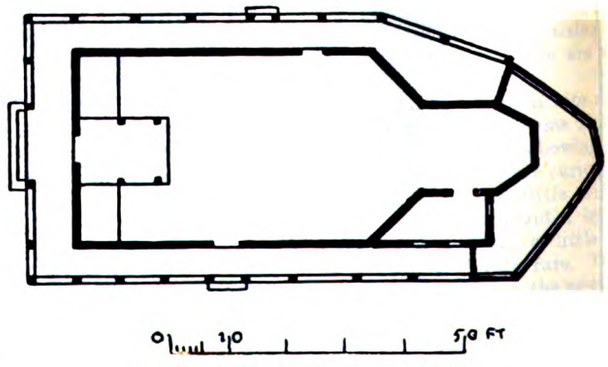


Fig. 11.—GROSS-DOEBERN—PLAN.

The plan of Burgsdorf is somewhat peculiar in that the nave is of two widths, the western end being made sufficiently wide to allow of galleries on each side for half the way up the nave, and there are large western and southern porches besides the usual surrounding lean-to. The bell-tower rises above the western part of the nave roof, and there is no other Dachreiter. There is a second canopied gateway, similar to the one at St. Rochus, Rosenberg (fig. 14), as well as the large lych-gate given on fig. 8.

Gross-Doebern, by Oppeln, has two churches, one the parish church of St. Katherine and the other the pilgrimage church of St. Rochus, shown in our view (fig. 11), which was enriched by Imperial donations in 1680.

The church of St. Mary, Lubowitz (fig. 7), belongs partly to the second half of the seventeenth century, portions having been in course of construction in 1697; but there are portions of an older church, for the "Visitations-Proto-

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koll" of 1679 mentions additions being made to its painted decorations and a sculptured and decorated ambone—whatever that may mean. Besides this there are two much older bells of great size remaining in the tower, one, about 30 inches in diameter, bears this inscription in Gothic characters: "Ave Maria Gracia plena Dominus tecum"; and another has in Roman letters, "Werbum Domini manet in eternum. INRI 1558."

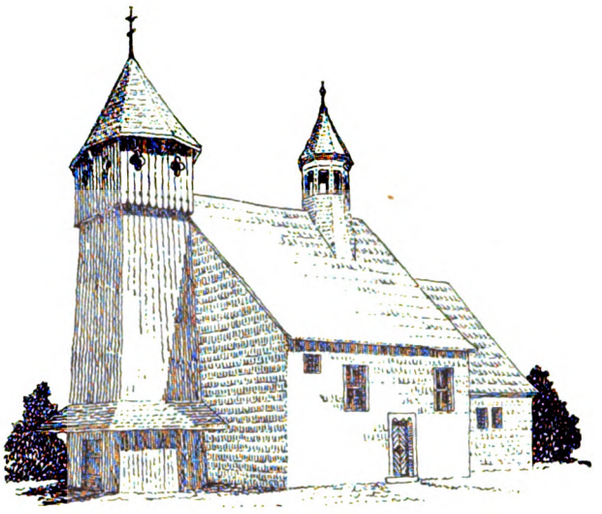
The beam across the entrance to the chancel of Omechau church, which shows in our sketch (fig. 10), bears on its western face the inscription "Ediff. 1529. Repar. 1753."

The church of St. Michael, Pawlau, has an old bell remaining of about 35 inches in diameter bearing in Gothic letters: "O Rex glorie veni cum pace M.CCCC.XCV. (1495) INRI . IHS . MARIA."

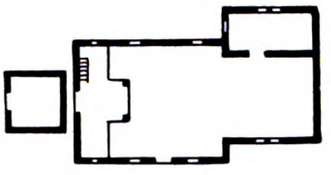
The *Visitations-Protokoll* of 1679 says that the church of Ponischowitz, which lies by the railway from Kosel to Cracow, was built of wood in the year 1404 and had among its treasures seven painted windows.

We will close our notes with some further references to the group of churches in the little Catholic town of Rosenberg lying to the north-east of Oppelin, containing some three or four thousand inhabitants, and still boasting of five churches, all of which, with the exception of the parish church, which is dedicated to St. Michael, are of timber. These four wooden churches are the two daughter-churches, or chapels of ease, of Corpus Christi and Alt-Rosenberg, built at the end of the seventeenth century, and the two pilgrimage churches of St. Rochus, built early in the eighteenth century, and St. Anna, the oldest part of which was erected in 1518, with a considerable addition built in 1668. This last-mentioned church, as showing many of the typical characteristics of these Silesian churches in the original structure, and so remarkable a divergence from them and from almost all other examples of church-planning in the later addition, is worth a somewhat detailed description.

On the accompanying plan (fig. 13) the original church is marked A with its sacristy B, and the extraordinarily planned later addition C. Over the nave roof rise two dachreitern, the western one for the ordinary bells, which are generally elsewhere placed in a detached tower, and the eastern one for the Sancte bell. The altar of this earlier



ALT ROSENBERG



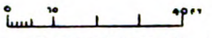


Fig. 12.—ALT-ROSENBERG.—PLAN

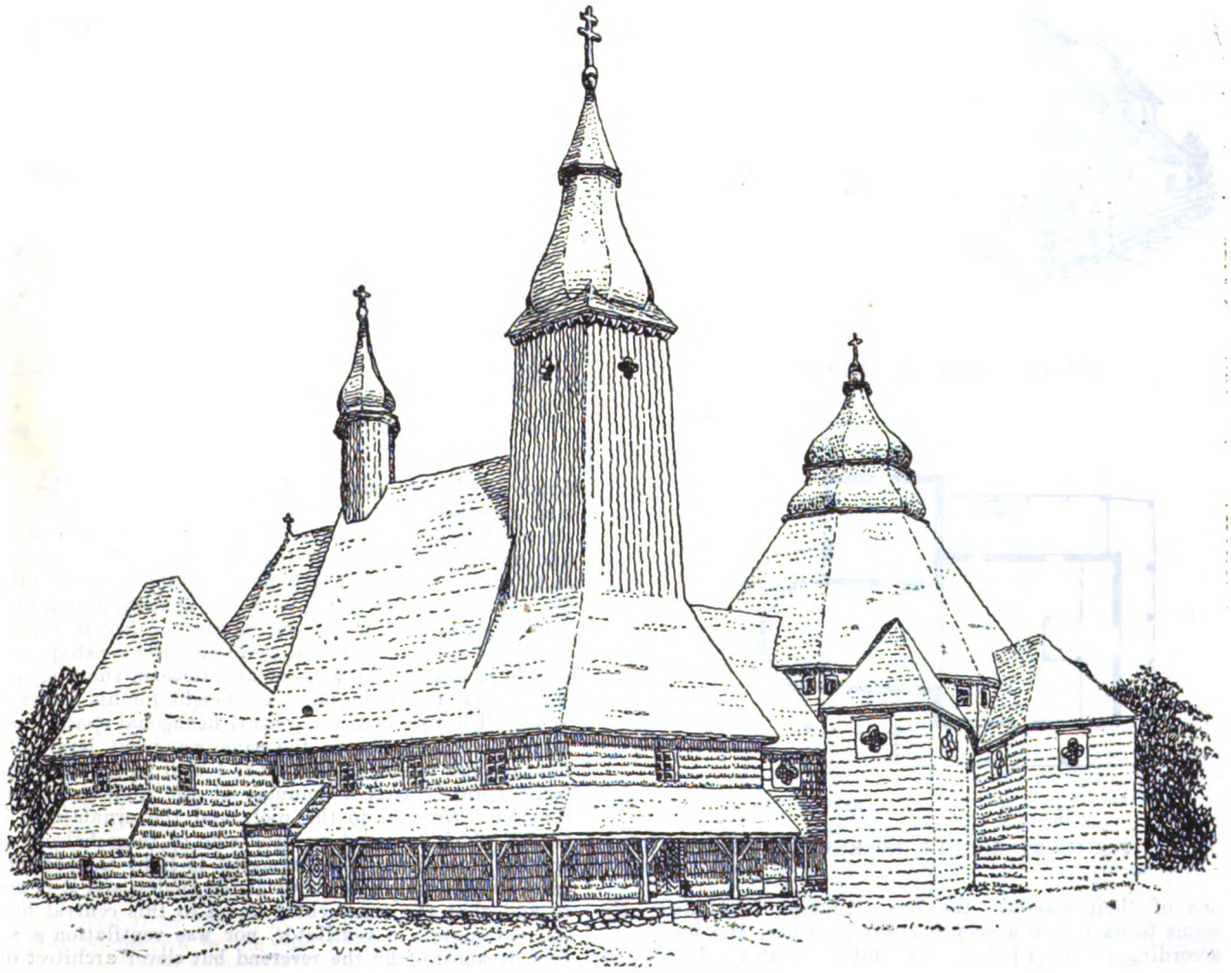


Fig. 13.—ST. ANNA, ROSENBERG.

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church is surmounted by a magnificently carved tryptich in the late Gothic style, unfortunately now painted over, which seems to be contemporary with the building.

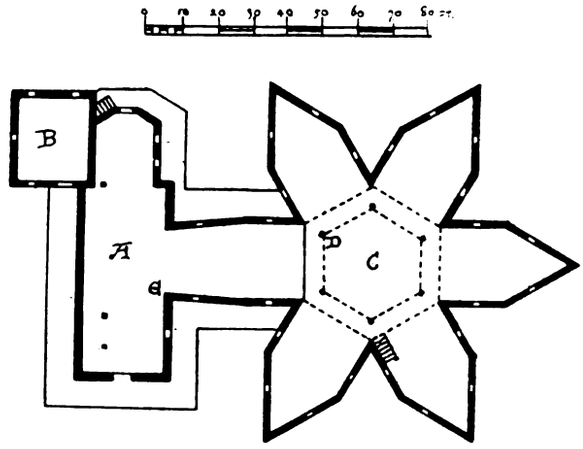
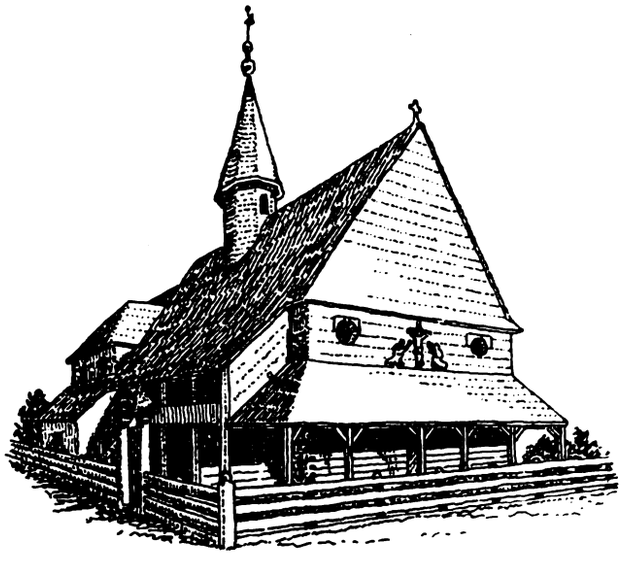


FIG. 13.—ST. ANNA, ROSENBERG.—PLAN.

This old pilgrimage church of St. Anna, although it was maintained and perhaps built at the expense of the State, seems to have been under the control of a convent of Canons Regular of the Augustinian Order of St. John Lateran, which may account for the patriarchial cross which appears over the western spire, and was in 1668 in the charge of



ST ROCHUS ROSENBERG

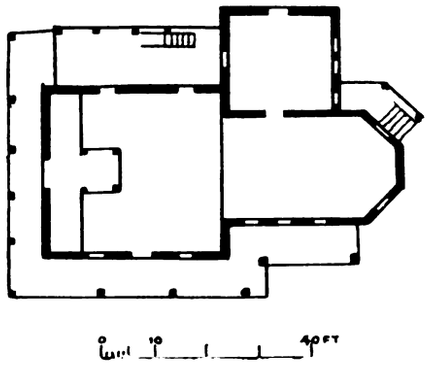


FIG. 14.—ST. ROCHUS, ROSENBERG.—PLAN.

one of their number, the Rev. Andreas Pechenius. He seems to have been a very popular preacher, and he found, according to the *Visitations-Protokoll* of 1679, the church was too small to hold the congregations which came out from Rosenberg to hear him; and he also showed himself to have been a very ingenious and original architect, if he may be credited with the design for extending the church and providing the extra space required. He did not destroy the old building, but he made a great addition to it on the south side, which gave him not only the increased accommodation, but enabled him to add considerably to the number of altars. The nature of the materials at his disposal prevented him from building a great hall; so he formed a number of apsidal chapels radiating from a central space, and by placing his pulpit at the point D he was enabled to command a congregation both in the new and old churches. Tradition, however, says that it was pure sentiment and not ingenuity which inspired the good father's plan, and that the five chapels were intended to typify the petals, and the nave the stalk, of the rose which appeared upon the arms of the town of Rosenberg. But whether it was sentiment or skill which suggested the plan, the result, as can be seen from our view, was as picturesque as it was original.

The arrangement of his roofs and galleries was not the least remarkable part of his design. He first, perhaps,

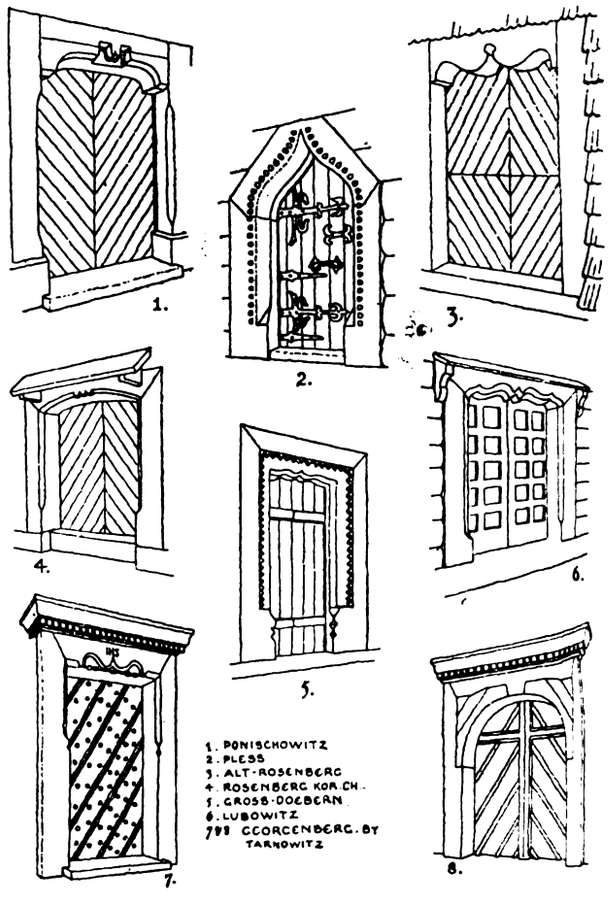


FIG. 15.—TIMBER DOORWAYS.

fitted up the old church with new galleries at the western end, returned partly along the north wall, there being also the old gallery over the Sacristy B. for important personages. and he removed the pulpit from the north side of the chancel to E, where it became partly available for the new buildings. He formed his new roofs over the chapels and connecting arm so as to show a flat ceiling about 3 feet 6 inches wide along the walls and boarded to a semi-circular shape between these flat spaces and without any tiebeam showing, and by this means he got the necessary height for his altars in the apses. The roof over the central hexagonal space was more lofty, though formed in the same way; but level with the flat ceilings was a gallery from 4 to 5 feet wide supported by elaborately carved columns at the angles, which were continued through to the roof, and the ornamental balustrades which occurred on each side of these balconies were framed into them. The windows to light this upper part were inserted under the eaves at the angles, and it is needless to add that the ornamental finish to this central building did *not* contain a ventilator, nor was ventilation a subject ever dreamed of by the reverend but clever architect of this building.

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ARTIFICIAL ILLUMINATION IN RELATION TO ARCHITECTURAL EFFECTS.*

By Mr. S. D. Chalmers, M.A., Head of the Department of Technical Optics, Northampton Institute.

The great progress in the theory and practice of artificial illumination has provided architects with new materials and resources for producing architectural effects, particularly in relation to the interiors of buildings, and the decoration of halls and smaller rooms. It is true that the illuminating engineer has as yet made little progress in the application of his new methods to these purely architectural problems; it was only natural that he should first turn his attention to the more utilitarian aspects of artificial lighting; his aim has been to produce the illumination requisite for the comfortable use of a room for its ordinary purposes; and economy has been one of his prime considerations. He has, to a very considerable extent, solved the problem of the efficient and economical distribution of the light available. He avoids excessive illumination of any point, and by screening his sources of light reduces the glare, and so is able to obtain the same visual effects with reduced actual illumination. He takes into account the reflection coefficient of his walls and ceilings, the nature of the objects to be illuminated and the fineness of detail which must be distinguishable. Incidentally he has made some progress in the illumination of the architectural features and decorations of the rooms. But progress in this latter direction is more dependent on the architect than on the illuminating engineer. It is not always possible to make effective use of artificial light in buildings and rooms which have been designed entirely with a view to their effect in daylight. Just as the architect considers the site and lighting of his building in regard to its outside form and its interior decoration, so he should consider the scheme of interior decorations in relation to the artificial lightings with which it will be used. Some types of decoration are quite unsuitable for artificial illumination and should be avoided in rooms which are intended to be used almost exclusively in artificial light. Other types are suitable for either illuminant. But the differences between the characteristics of daylight and artificial illumination are such that one cannot assume that good results will be obtained by artificial light, even though the results by daylight are most satisfactory.

But under the term of artificial illumination we include such varieties of actual lighting, that much may be done to improve the effect in any given case.

It is my object to-night to point out the fundamental similarities between natural and artificial lighting, to indicate how variations in natural lighting have led to important architectural developments, and to show how the results achieved with natural lighting may indicate the successful treatment with artificial lighting.

The great contrast between the Classic and Gothic styles is closely associated with the variation of the lighting conditions. In Greece, the conditions were simple, a bright source of light almost always available, and a relatively small amount of diffused light. In the sunlight, clear cut shadows were produced, and only shallow mouldings were necessary to secure the necessary contrasts of light and shade. This is well illustrated in the columns of the Parthenon, where the sharply undercut mouldings produce clear sharp bands of shadow. But when buildings in the Classic style are erected in climates like our own, the quality of the light is different, and the features must be modified if the same effect is to be produced; and the proportion of diffused light being greater, it is necessary to deepen the flutings to produce sufficient contrast. This same general characteristic is noticeable in artificial illumination when one bright source is replaced by a number of small ones.

It is this same effect of deeper mouldings and flutings that marks the Gothic as contrasted with the Classic architecture, and once more it is the lighting conditions which determine the extent of the change; the more diffused the light, the deeper must be the moulding. Another case of adaptation to the lighting is the pulvinated frieze in which the surface is lightly curved, so that the upper part intercepts more light than it otherwise would do, and so gives a shading from the bright upper to the dull lower part. This is effective in the case where the light is well diffused, but comes only from a comparatively restricted sky area. This is an intermediate case between the direct sunlight and the wholly diffused light.

These same general principles apply also to interior ornament. The more diffuse and less direct the lighting the more is it necessary to intensify the mouldings, carvings, and other relief. When the lighting comes from above in a comparatively narrow beam, the ornament must be in low relief, while a general diffused lighting from in front is more suitable for cases of deeper relief. An illustration of this principle is furnished by the miserere seats with the low relief above and deep relief below. In most cases of artificial lighting ornaments on the level of the lights may be in deeper relief than that well above or below. In the same way it is unwise to illuminate a ceiling with deep mouldings by lights placed too close to the ceiling, as this results in long and deep shadows. When the lighting is very diffuse, it is sometimes preferable to produce the impression of depth by special devices, such as the linen-fold panel of the English and Flemish architecture of the fifteenth century. Such devices are usually suitable for artificial as well as natural lighting.

Turning now to the possibilities of the artificial illumination of interiors, we find that the conditions are in some respects less, and in others more favourable than those of natural lighting. The daylight usually comes as diffused light from a comparatively large window area, producing very variable illumination throughout the room. It is exceedingly difficult to modify its distribution to any appreciable extent, and the amount is very variable throughout the day and year. On the other hand, the eye adapts itself very readily to the variations of daylight, ignoring all excessive contrast and accepting the variations in colour of the light without noticing them. Not the smallest advantage, perhaps, is that the actual source of light does not come into view, and we are not obliged to devise special methods of screening it.

In the case of artificial illumination, the original sources are comparatively small, bright objects which obtrude themselves most unpleasantly if we omit to screen them from direct view. But because the sources are small we can surround them by diffusing screens or reflectors, and materially modify the distribution of the light coming from each source. With modern, properly designed reflectors it is possible to produce almost any desired distribution of the light from practical uniformity to concentration in comparatively small angles in any desired direction. By the judicious placing of the sources of light and the proper choice of reflectors we can obtain almost any desired distribution of the light with one limitation, that the light coming from each individual source to any point will be coming in a comparatively small angle. Each source would tend to produce well marked deep shadows, and care must be taken that the effects of the other sources are to reduce the depth and size of these shadows to the desired amount. In this way the shadows may be made architecturally useful rather than the reverse.

It is this possibility of varying the character of the lighting and the change in the distribution almost at will that makes it possible to obtain different architectural effects. The ideal of the illuminating engineer has generally been to produce even and soft illumination throughout the room. But it seems to me that this is not always the most suitable lighting, and that in some cases a more one-sided lighting, with a subsidiary cross or reverse lighting, might be usefully employed. But in using this method one must not attempt to imitate the conditions of daylight too closely. The variations must be considerably less than those of daylight, because the actual illumination will usually be considerably below that which prevails with daylight, and at this lower illumination the variation is much more readily appreciated. This effect is not materially altered by actually increasing the illumination by artificial light, because of the dazzling effect of intense artificial light. Owing to the adaptation of the eye to the conditions prevailing in artificial illumination, comparatively small variations are effective, and it is unwise to produce strong contrasts between the different parts of the room. Most people find it unpleasant to sit in a well-lighted part of a room while the rest is in comparative darkness. It is on account of this adapted condition of the eye that it is so important to screen the modern sources of high intrinsic brilliancy, and the only effective way is to make the light appear to come from an area much larger than that of the source. The smallness of the size of artificial sources is troublesome when reflecting surfaces, such as varnished wood, are present and in some cases the reflec-

* A Paper read before the Society of Architects on Thursday, April 15.

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tions are objectionable. They may be reduced by increasing the size of the source or altering its position. The same difficulty of reflection occurs in connection with picture lighting, and care should always be taken to place the sources sufficiently above the picture to make the reflection invisible at the ordinary level of the eye. This generally adds to the difficulty of securing even illumination on the picture, but by properly distributing the light from the source almost any required degree of evenness of illumination can be obtained.

Still further difficulties are encountered in regard to coloured ornamentation, and these troubles are accentuated if the illumination on the coloured object is low. The relative brightness of the parts of different colours will change as the illumination is diminished, and it is a wise precaution to secure abundance of light for any coloured ornamentation. Even with this precaution the colour values are unlikely to be exactly the same as with daylight, though the recent attempts to improve the colour rendering by artificial light have met with considerable success.

But the rendering of variations of shade in a flat object is almost the same by artificial light as by daylight, and the same may be said of pierced work where the contrast of a carving is enhanced by piercing.

Pierced screens are interesting, as showing one of the earliest methods of combining natural with artificial lighting effects. In daylight, the screen is lit from in front, the openings appearing dark to contrast with the screen when the altar is lit up, the screen is seen in silhouette, and the piercings are light. The same effect of interchange of light and dark in natural and artificial lighting is seen in the windows of churches and other buildings. The walls, near the windows, which are of least importance in daylight are the most prominent features in the artificial light. Their architectural treatment, though making little difference by daylight, may be of the greatest value for artificial lighting.

But there are other methods of artificial lighting to which I would like to refer. In these methods attempts have been made to imitate the conditions of daylight lighting. An example is the use of groups of lights surrounded by large diffusing screens or reflectors, in imitation of the method of the oculus as used in the lighting of the Pantheon. It is easy in special cases to imitate the effect of this method of daylight lighting, and the method is applicable in large halls or theatres. But the method of indirect lighting approaches most directly to the effects of daylight.

In this method the light from the source is sent on to a white ceiling or screen and is directed downwards to illuminate the room. The absence of marked shadows renders this method very useful for certain purposes, as, for example, the lighting of drawing offices, but, unless the illumination is very high, the method gives the impression of a poor imitation of daylight, suggesting coldness and wintriness. We interpret this artificial lighting in terms of daylight, and the suggestions that this daylight carries with it.

It is probably on this account that many people prefer the semi-indirect system of lighting, in which part of the light from the source is allowed to pass through the shade, while the other part illuminates the ceiling. In this case the impression of artificial lighting is retained and the comparison with daylight does not obtrude itself; at the same time the conditions of shadow are more those of daylight, and the indirect light from the ceiling tends to soften the whole lighting.

This method of semi-indirect lighting is specially useful when the ceiling and frieze are worthy of attention in themselves, as, for example, in the beautiful moulded ceilings.

In all these cases of indirect lighting it seems preferable to show sources which illuminate the ceiling, even if greater part of the light be really derived from concealed sources. There are, however, a number of cases in London where the ceiling has been lit entirely by means of concealed lights, and the effect has not been happy. These lights produce beautifully even lighting on the ceiling, but one unconsciously asks where does the light come from, and the only explanation is that there must be an opening between the walls and the ceiling, and apparently it must extend all round, there being no distinctive direction in which the light comes, and ceilings which are unsupported are uncanny. In one of these cases the effect was much improved by the use of a number of visible sources which apparently illuminate the ceiling.

Thus, as regards interior illumination, the conditions are somewhat different for artificial and natural lighting. But each has its advantages, and by judiciously using the resources of artificial lighting it should be possible to obtain quite as good results as with natural lighting, but this is a matter for the architect as well as the illuminating engineer. New methods and arrangements of lighting are required.

In the cases where rooms are to be used only or mainly by artificial light the architectural features should be designed in relation to the actual method of lighting to be employed. When few, but large sources of light are to be used, the conditions approximate to outside natural illumination, and models of ornament and architecture may well be sought in Classical types, but when numerous smaller sources are to be used, the conditions approximate more to the Gothic conditions, and mouldings and ornamentation of this style might well be studied in connection with their value in artificial light.

Another interesting problem which I can only touch on lightly is the illumination of the exterior architectural features of a building.

When the aspect is a southern one the same conditions as in daylight may be approximated to by the use of one large source of light high up in front of the building, and a number of smaller sources placed lower down and distributed along the length of the building. When the aspect is a northerly one, the whole lighting should be by a number of small sources evenly distributed in front of the whole building.

Occasionally friezes can be well lit by concealed lights above the frieze, the proper distribution of the light being secured by the use of suitably designed reflectors. In this case, again, the difference between the treatment of high and low relief is important and the effect of the high relief is even more exaggerated for statues or very deep mouldings, which require front rather than high lighting.

NORTHERN ARCHITECTURAL ASSOCIATION.

THE annual general meeting of the Northern Architectural Association was held at 6 Higham Place, Newcastle, Mr. Charles S. Errington (Vice-President) occupying the chair, in the absence of the President, Captain E. Burns Dick, Tynemouth Royal Garrison Artillery, who is on active service.

It was resolved that subscriptions for the current year, due January 1, 1915, be remitted in the case of members who were at that time actively engaged in the defence of the country.

Mr. H. L. Hicks (Hon. Secretary) read the report of the Council, from which the following has been extracted:—

"The members' roll is now as follows:—Members, 84; associates, 81; students, 30—total, 195, an increase of 4. One associate and three students have been elected during the session. The Council regret to record the death of Mr. Thomas Reay, which took place on December 23, 1914. Mr. Reay was the second oldest member of the Association, having joined in the year 1870, and was held in high esteem by all who knew him. By the will of the late Mr. William Glover, our Association has received during the past session a further sum of £500.

"The Council wish to record the thanks of the Association to Mr. E. G. Harvey, solicitor, for advising them on some difficult matters in connection with the Glover Bequest. At the last annual general meeting Mr. R. Burns Dick was elected President. During the latter part of the session he has been called upon to fulfil his military duties, and his place has been taken by the Vice-President. The Royal Institute preliminary and intermediate examinations were again held in the rooms of the Association in June and November last, and several candidates presented themselves for examination. In the intermediate examination Mr. H. St. J. Harrison and Mr. C. B. Stewart, students of this Association, were successful. In the preliminary examination Mr. W. Paulden, student of this Association, and Mr. F. C. S. Harrison were successful. The boundaries of societies allied to the Royal Institute have recently been revised, and in consequence the County of Cumberland has been transferred to our Association from the Manchester Society of Architects. Owing to the outbreak of war, the usual course of lectures at the winter meetings was abandoned.

"A War Committee has been formed, consisting of the whole of the members of the Council, acting in conjunction with the Royal Institute War Committee. Its purpose has been to appeal for funds to relieve distress among architects, to compile a list of architects who are willing if called upon to do Government work, and to assist in carrying on the

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practice of members who have joined the Forces. The Committee has held three meetings, and has recommended that a donation of 20 guineas be made from the general fund for the relief of distress. This recommendation was ratified by the Council. As a result of an appeal to our members the sum of £21 9s. has been already raised and sent as a first instalment, together with the donation of 20 guineas to the Royal Institute War Relief Fund.

"In the students' competition there has been one competitor for measured drawings (age limit 25 years) and one competitor for the essay prize. The Council have decided that no prizes be offered to students for the ensuing session.

"The following is a provisional list of members on active service:—R. Burns Dick, captain, Tynemouth R.G.A.; D. Hill, Staff captain, N.F.; N. E. Leeson, R.E.; G. Reavell, jun., lieutenant-colonel, N.F.; J. Spain, major, 7th D.L.I.; A. K. Tasker, captain, T.E.E.; G. E. Charlewood, Army Pay Department; J. B. Cubey, second lieutenant, 23rd battalion, N.F.; W. R. Davison, O.T.C.; P. G. Graham, second lieutenant, N.F.; G. E. Hunter, captain, 6th Battalion N.F.; A. E. Lowes, A.S.C.; R. Mauchlen, second lieutenant, D.L.I.; S. W. Milburn, second lieutenant, North R.F.A.; W. Milburn, junr., lieutenant, North R.F.A.; W. W. Tasker, second lieutenant, R.E.; B. Watson, Artists' Rifles; A. W. Wilkinson, lieutenant, 9th D.L.I.; T. C. Hamilton, second lieutenant, 23rd Battalion, N.F.; H. St. J. Harrison, O.T.C.; J. Henderson, 16th Battalion N.F.; J. Hill. Honourable Artillery Company; W. R. Isherwood, Northern Cyclists' Corps; W. N. J. Moscrop, second lieutenant, 6th Battalion, D.L.I.; T. A. Page, captain, D.L.I.; W. J. Smith, Northumberland Hussars Imperial Yeomanry; S. Wilson, Northern Cyclists."

Mr. J. W. Dyson moved the adoption of the report, which, he remarked, was very satisfactory. It was gratifying to note the increase of members, and the large proportion who were serving the country. They would no doubt give a good account of themselves, and the Association would have reason to be proud of them. Among them was the President, who had done so much for the benefit of the Association.

The report was adopted.

Mr. J. T. Cackett (Hon. Treasurer) submitted a financial statement, showing a credit balance. This was also adopted.

The following were declared to have been duly elected:—President, Mr. R. Burns Dick; Vice-President, Mr. C. S. Errington; Hon. Treasurer, Mr. J. T. Cackett; Hon. Librarian, Mr. J. Bruce; Hon. Secretary, Mr. H. L. Hicks; Hon. Assistant Secretary, Mr. C. I. Greenhow; Council, Messrs. G. T. Brown, H. C. Charlewood, F. E. Dotchin, L. G. Ekins, W. Milburn, J. Oswald, A. B. Plummer, F. W. Rich, A. K. Tasker, J. W. Taylor, C. Walker, H. Wright, M. G. Martinson, W. Milburn, junr., F. N. Weightman, Mr. J. Hall (Hon. Local Secretary for Sunderland), Mr. W. T. Jones (Hon. Local Secretary for Durham), Mr. J. H. Morton (Hon. Local Secretary for South Shields), and Mr. W. J. Moscrop (Hon. Local Secretary for Darlington).

WILLIAM BLAKE.

The concluding lecture of the series which has been given on Wednesday evenings at Carpenters' Hall, London Wall, E.C., for ten successive weeks was delivered by Professor Selwyn Image, M.A., who took as his subject "Life, Work, and Influence of William Blake."

William Blake was born either on November 20 or 28 (it is not quite certain which), 1757, at No. 28 Broad Street, Carnaby Market, near Golden Square, and he died in his modest house, consisting of two rooms, at No. 3 Fountain Court, Strand, close to Simpson's dining-rooms, on August 12, 1827, at the age of seventy. Eighty-six years after his death the first quite adequate exhibition of his pictures was opened in the Tate Gallery; the interest it aroused was widespread. Owing to it, Blake is now known to a multitude of people to whom before he was nothing better than a name.

Blake's father was by trade a hosier in a small though comfortable way of business. That the boy would have developed into a unique personality under any circumstances is certain. But the father was a man of deep religious feeling, a convinced Nonconformist, and he had a family reading of the Bible every day.

That the child is father to the man was certainly true of Blake. His visions were of all real things the most real to him: God first revealed Himself to the boy, we are told by his wife, when he was but four. At ten he heard the angels—at Peckham of all places! The man believed in the visions literally, and he left us what he has precisely because he did so believe. Allan Cunningham, in his short biography, says it is told of Blake that at ten years of age he became an artist, and at twelve a poet. There seems no reason to cavil at the statement. At the age of twenty-six there was published the "Poetical Sketches," his first volume of poems. This was brought out by the kindness of two friends, one of whom was Flaxman, the sculptor. This is a volume full of beautiful things, and, while vastly original, showing a deep study of the first great poetical literature. The following exquisite lyric was written when he was possibly twelve, certainly not more than fourteen, years of age:—

How sweet I roamed from field to field,
And tasted all the summer's pride,
Till I the Prince of Love beheld,
Who in the sunny beams did glide.

He showed me lilies for my hair,
And blushing roses for my brow;
He led me through his gardens fair,
Where all his golden pleasures grow.

With sweet May-dews my wings were wet,
And Phœbus fired my vocal rage;
He caught me in his silken net,
And shut me in his golden cage.

He loves to sit and hear me sing,
Then, laughing, sports and plays with me;
Then stretches out my golden wing,
And mocks my loss of liberty.

This truly is as imaginative and lovely a lyric as may be. The boy's admiration went out instinctively after the finer ideals. In poetry his models were the Elizabethans and Milton; in art they were Michael Angelo and Raphael. Raphael, he says, from his earliest childhood never hid from him.

These precocious gifts were not thwarted by his parents. At the age of twenty he was apprenticed to James Basire, an eminent engraver, thoroughly to be taught his business. And let it be said that he was thoroughly taught it. Blake's accomplishment as an engraver is beyond question. Apart from attaining this, Blake owed to Basire first his insistent habit of design and austere delineation, and secondly his romantic temperament. These were fostered by his master. Considering his predominant devotion to Raphael and Michael Angelo, one might expect his art would come from Italy of the High Renaissance. But in reality Blake was the child of the Middle Ages and not of the Renaissance. Thus in his design showing the Canterbury Pilgrims setting out on their journey the architecture of the buildings in the background is Gothic—though poor and unconstructional. His architecture is, indeed, always Gothic. During his apprenticeship he was sent to make careful drawings of Westminster Abbey and other Gothic buildings in London. These impressed him enormously; but he never mastered, or else was entirely indifferent to, their constructional principles. He gives us in his pictures ill-designed Gothic of the poorest Churchwarden type. One might suppose he would have adopted Italian Renaissance forms in preference. Undoubtedly it was his mediæval mysticism which made him turn to Gothic. Perhaps, like his great Italian master, he was so absorbed in the human figure that to other things he felt indifferent. Some people, however, could not but feel his faulty architecture was a blemish in Blake's work.

His apprenticeship ended, Blake went in 1778 as a student to the school of the Royal Academy. He remained there only a little time, and obtained but little artistic benefit. It brought him, however, into the acquaintance of Stothard, Flaxman, and Fuseli. At that time Sir Joshua Reynolds was President. Alas! the story of the relations between him and Blake is no pleasant one. Reynolds criticised Blake's work. Blake never forgave him, though he was not, under ordinary circumstances, of an implacable temperament: his anger at bottom was not a personal matter in this case. To Blake the art of painting was the most potent means of expressing to the world that Divine Will which was his living creed. We can understand nothing about the man unless this fact is realised. Apart from any question of accomplishment, he believed there was art inspired by God for the salvation of the world, and art inspired by demons for its destruction. Sir Joshua's was, in Blake's eyes, of the latter temper.

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At the age of twenty-five—that is, in 1782—Blake married Catherine Boucher. His wife was the daughter of a market gardener at Battersea, was singularly beautiful, and was totally uneducated. If ever there was a marriage made in heaven it was this one. She became the closest indispensable helpmate of his life both in their humble homes and in his art. In 1787 he moved to 28 Poland Street, Soho, where he set up in business as print seller and engraver. This year was the *annus mirabilis* of his life; to it belongs his incomparable "Songs of Innocence." These were not published in the ordinary way, for Blake had never money enough to enter into dealings with publishers. His method of work was, he declared, the result of a direct spiritual visitation from his dead brother, while St. Joseph had revealed to him the process of mixing his colours with diluted glue. His brother taught him how to produce poetical works when he had no money to pay for printing. "This method," says Mr. A. Gilchrist in his Life, "to which Blake henceforth consistently adhered for multiplying his works, was quite an original one. It consisted in a species of engraving in relief, both words and designs. The verse was written, and the designs and marginal embellishment outlined, on the copper with an impervious liquid—probably the ordinary stopping-out varnish of engravers. Then all the white parts, or lights (the remainder of the plate, that is), were eaten away with aquafortis or other acid, so that the outline of letter and design was left prominent, as in stereotype. From these plates he printed off in any tint—yellow, brown, or blue—required to be the prevailing (or ground) colour in his facsimile; red he used for the letterpress. The page was then coloured up by hand in imitation of the original drawing, with more or less variety of detail in the local hues."

In 1794 Blake was brought into touch with Mr. Thomas Butts, of Fitzroy Square, who not only admired Blake's work, but grew interested in his character. Butts adopted the always wise practice for a patron of art of leaving Blake altogether to his own judgment. He became his best purchasing patron during the next thirty years. In 1800 the artist was introduced by Flaxman to Hayley, who was then about to write a biography of his friend and fellow-poet Cowper. Blake went down to the small Sussex village of Felpham so as to engrave the illustrations to this work. He thus wrote to Flaxman—Dear Sculptor of Eternity—immediately after taking up residence in one of the cottages: "We are safe arrived at our cottage, which is more beautiful than I thought it, and more convenient. It is a perfect model for cottages, and I think for palaces of magnificence—only enlarging, not altering, its proportions, and adding ornaments, and not principles. Nothing can be more grand than its simplicity and usefulness. Simple without intricacy, it seems to be the spontaneous expression of humanity, congenial to the wants of man. No other-formed house can ever please me so well; nor shall I ever be persuaded, I believe, that it can be improved either in beauty or use." Alas! the ecstasy was but short lived. In 1804 he returned to London, taking lodgings at 17 South Molton Street, Oxford Street. He soon issued "Jerusalem, the Emanation of the Giant Albion." Blake described it as "the grandest poem that this world contains," adding: "I may praise it, since I dare not pretend to be any other than the secretary—the authors are in eternity." In an earlier letter he had said: "I have written this poem from immediate dictation, twelve or sometimes twenty or thirty lines at a time, without premeditation, and even against my will." In the following year Blake came into touch with Cromek, the publisher, and a bad, bad business it proved to be. The artist tried to right himself by holding an exhibition of his pictures, particularly "Canterbury Pilgrimage," and wrote for it a "Descriptive Catalogue." The venture proved a complete failure, and it nearly broke him.

After this Fate began to relent, for she had still her greatest opportunity for the artist. In 1813 there entered into Blake's life a new influence in John Linnell, the landscape painter, then a struggling young man. Gradually from this date there began to gather round Blake a company of younger men, Linnell's friends, including the water-colour painter John Varley, Richter, and Holmes. They grew to be almost his disciples. The consequent familiar sympathetic intercourse with these generous hopeful friends brought not consolation only, nor encouragement, nor recompense come at last; it must have been an intellectual renewal of spring in the winter of life. One cannot but fancy that the last twelve, at any rate the last six, years of Blake's life may have been the happiest. The cunning of his hand showed no failure. The beloved helpmate of his life was always at his side. Pictorially the most majestic of his work was waiting to be done. Between 1821 and 1826 was designed the incomparable illustrations of "Job." In the whole world of art there are no designs more original, in some qualities more masterful.

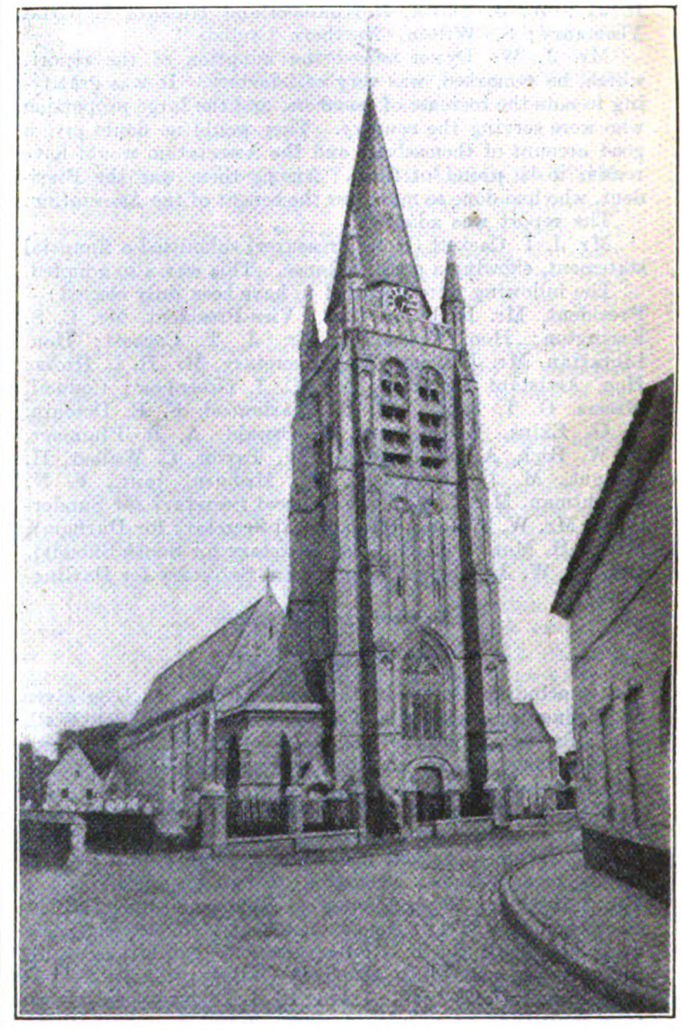
On May 18, 1826, we hear of a desperate shivering-fit and "a deathly feel all over the limbs." On his last day—August 12, 1827—"he composed and uttered songs to his Maker so sweetly to the ear of his Catherine that, when she stood to hear him, he, looking upon her most affectionately, said, 'My beloved, they are not mine! No, they are not mine.'" Another account says that just before he died his eyes brightened and he burst out into singing of the things he saw in heaven.

He lies buried in Bunhill Fields Cemetery. Alas! there is no headstone to mark the grave, and the place of it is unknown.

VLAMERTINGHE'S PERIL.

By JOHN A. RANDOLPH.

THE newspapers of Monday last (April 12) briefly report that several French soldiers were killed at "Vlamertinghe, near Poperinghe" (it is midway between Ypres and Poperinghe, to be exact), that considerable damage has been done to the village, and that, on the advice of the French officer in charge of the troops there, part of the village was

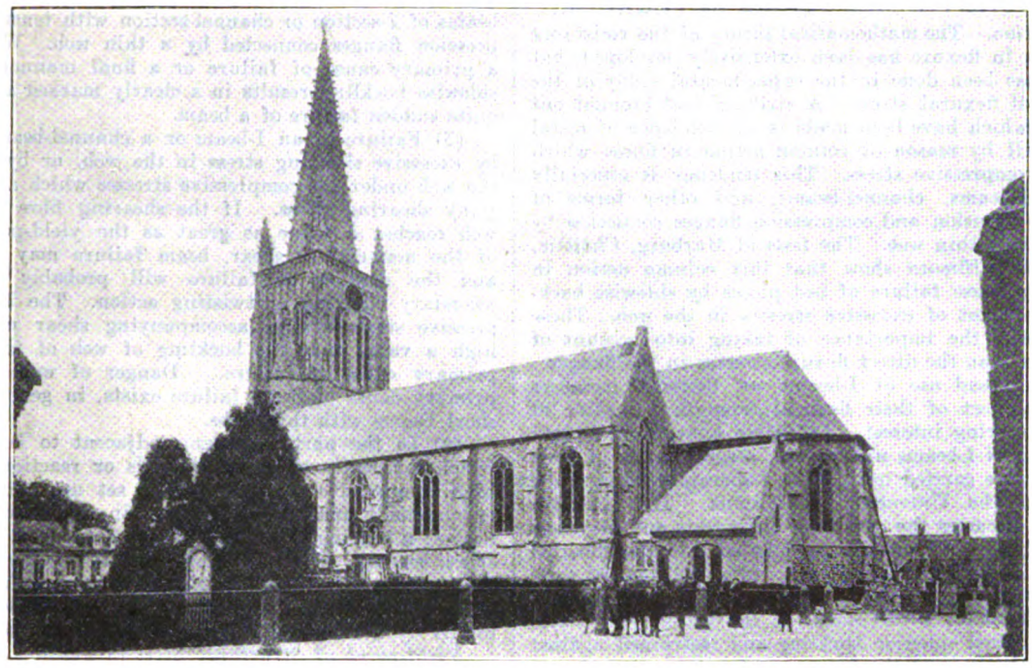


VLAMERTINGHE.—THE CHURCH.

evacuated. Probably the Ypres side is the part in question. The church is almost at the western end, at about five minutes' walk from the station, by a winding, fairly broad, and rather poor street, the burgomaster's fine Gothic residence and municipal offices combined being close to the otherwise wretched and shockingly paved station approach.

The massive brick tower of the old Gothic church is quite of the Flemish pattern, but, curiously, between the graceful corner pinnacles at the top is an octagonal brick

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ELVERDINGHE.—THE CHURCH.

clock chamber of good proportions, surmounted by a lofty extinguisher-roof of almost spire-like dimensions.

To the north of the village the beautiful spire of Elverdinghe can be discerned, some five miles distant.

We referred to both of these churches in the issue of March 26 last.

ANTIQUARIAN FINDS IN CYPRUS.

The annual report for 1913-14 on Cyprus recently issued by the Colonial Office says:—

A sum of £450 having been provided in the estimates for antiquarian research, Professor John L. Myres, Wykeham Professor of Ancient History at Oxford, was invited by Government to undertake excavations in Cyprus. Professor Myres remained in the island from September to December 1913, during which period he supervised excavations in several localities with most successful results. The first site excavated was at the village of Levkoniko, in the Famagusta district, where some large statues had previously been found by the villagers. A small rural sanctuary was cleared out, and the Cyprus Museum enriched by a very fine series of stone sculptures, almost unique as regards the brilliant preservation of the painted decoration, in which all styles of Cypriote art, from the seventh century B.C. to the Græco-Roman period, are represented. A small statuette of a votary, in mixed Oriental style, of the sixth or seventh century B.C., and four small bronze oxen of the same or an earlier period were also found here.

Excavations were next carried out at Enkome, near Salamis, where in 1895-96 a rich Mycenaean necropolis was excavated by the British Museum. Here the finds were scantier, only two tombs being found intact; but at the eastern part of the site were discovered the remains of what may have been the fortification wall of a Mycenaean settlement, and valuable material for the history of the ancient city was collected. Work was then transferred to Lampouso, on the north coast of the island, about eight miles west of Kyrenia, where important treasures of Byzantine gold and silver vessels (now divided between the British Museum, the Cyprus Museum, and the Pierpont Morgan Collection) had at various times been unearthed. Excavations had not been long in progress here when news was brought that tombs were being found by villagers at the adjacent large village of Lapethos. After a preliminary inspection it was decided to remove the work to the Lapethos site, which proved to be a portion, probably the central part, of a Bronze Age necropolis of perhaps unique importance and dimensions.

Two or three feet under the present surface of the soil is found the rock in which the tombs are cut. The tombs are usually slightly vaulted caves of irregular, round, or sometimes oval, shape. Some of them are small, but most of them are large family tombs, with niches at the sides, from one to four in the same tomb. The doors of the tombs, which were usually at the middle of one side, were always closed with thick irregular stone slabs. More than fifty tombs were opened in the central field, and about ten in the neighbouring fields on either side. Many of the tombs had fallen in and were full of earth, so that the objects were taken out with great difficulty, and were mostly broken. But most of the tombs were in good preservation and the objects in good condition, and it was possible to take out even skulls and bones in more or less good preservation. The tombs were usually rich in contents, some of the large family tombs containing a great quantity of objects. More than 350 objects were taken from one such large tomb.

The finds consisted chiefly of pottery and bronze objects. In the pottery all the varieties of the Early and Middle Bronze Age periods are represented. Some of the vases are quite unique and very interesting. Extremely interesting are the early clay figurines from these tombs, of red polished ware, with incised decoration. A large quantity of terra-cotta whorls with incised decoration was also found, also a number of stone whorls. Extremely rich is the collection of bronzes; more than 500 objects were found, some of them quite unique specimens. They consist of daggers, knives, axes or celts, pins (of different kinds, some of them large, with conical mushroom-like heads and eyes half-way down the shaft), needles, awls, tweezers, spirals, &c. Some silver-lead spirals and two gold spirals were also found. These were the only gold objects found in the whole necropolis, and probably represented the first appearance of gold in the Early Bronze Age period.

An interesting piece of work has been carried out at Salamis, where the broken lower lengths of the marble columns of the Roman temple were set up on the old bases *in situ*, rendering the appearance of the site more intelligible to visitors. In the course of the work a drinking fountain or bath was laid bare at the south-west corner of the colonnade, with a hoard of much decayed bronze coins of the Emperor Heraclius.

M. Paul Lambotte, Directeur des Beaux-Arts au Ministère des Sciences et des Arts de Belgique, has offered to give a second lecture before the Royal Society of Arts on "Constantin Meunier et les Sculpteurs Belges de son Temps," as a supplement to the Aldred Lecture which he delivered on "L'évolution de l'école Belge de Peinture (1830-1900)" on March 11. The lecture, which will be copiously illustrated with lantern-slides, will be given on Thursday, May 6, at 4.30 P.M.

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THE STRENGTH OF I-BEAMS IN FLEXURE.*

Introduction.—The mathematical theory of the resistance of materials in flexure has been extensively developed, but much less has been done in the experimental study of the phenomena of flexural stress. A striking fact brought out in the tests which have been made is the tendency of metal beams to fail by reason of column action in fibres which are under compressive stress. This tendency is especially strong in I-beams, channel-beams, and other forms of beams having tension and compression flanges connected by a comparatively thin web. The tests of Marburg, Christie, and Burr and Elmore show that this column action in I-beams may cause failure of test pieces by sidewise buckling or on account of excessive stresses in the web. These tests emphasise the importance of taking into account of stresses other than the direct flexure stresses in the flanges.

The widespread use of I-beams as flexural members makes the subject of their flexural strength a matter of general engineering interest. To obtain experimental data on the action of I-beams under load, several series of tests of I-beams were carried out in the Laboratory of Applied Mechanics of the University of Illinois This bulletin records and discusses the results of these tests and of others of similar kind. A formula is deduced for the flexural strength of I-beams which are not restrained against sidewise buckling. There also is given a discussion of the stiffness of I-beams, a discussion of the action of I-beams restrained against sidewise buckling and restrained against twisting at the ends of the beams, and a discussion of web failure of I-beams.

Phenomena of Flexural Failure.—The formulas commonly used for computing the stresses and deflections in beams are based on the assumptions (1) that a plane cross-section of a beam remains plane during flexure and (2) that the moduli of elasticity of the beam material for tension and for compression are equal and constant. For low stresses and for beams of medium or long spans these assumptions are very nearly exact. They become rough approximations when a beam is loaded to a point near failure.

The failure of beams of brittle material usually occurs by snapping of the extreme tension fibres at a computed fibre stress higher than the tensile strength of the material as determined by tension tests of specimens. Brittle material is nearly always much weaker in tension than in compression. As the fibre stress in beams of such material increases with increasing load, by reason of the change which takes place in the values of the moduli of elasticity, the tension side of the beam stretches more readily than the compression side shortens. The effect is to shift the neutral axis of the beam toward the compression side. This, together with the difference in strength, causes the actual tensile fibre stress to be less than the computed tensile fibre stress.

The failure of beams of ductile material may take place in one of a number of ways:—

(1) The beam may fail by direct flexure. Under increasing load the usual flexure formulas are very nearly exact up to a load which stresses the extreme fibres of the beam to the yield-point strength of the material. When the yield point is reached in the extreme fibres, the deflection of the beam increases more rapidly with respect to an increase of load; and if the beam is of a thick, stocky section, or is firmly held so that it cannot twist or buckle, failure takes place by a gradual sagging, which finally becomes so great that the usefulness of the beam as a supporting member is destroyed.

(2) In a beam of long span the compression fibres act somewhat as do the compression fibres of a column, and failure may take place by buckling. Buckling failure in general occurs in a sidewise direction. Sidewise buckling may be either the primary or the secondary cause of failure. In a beam in which excessive flexural stress is the primary cause of failure, and in which the beam is not firmly held against sidewise buckling, the primary overstress may be quickly followed by the collapse of the beam due to sidewise buckling. The sidewise resisting strength of a beam is greatly lessened if its extreme fibres are stressed to the yield-point. Sidewise buckling may in some cases be a primary cause of beam failure, in which cases the computed fibre stress, in general, does not reach the yield-point strength of the material. Sidewise buckling not infrequently limits the strength of narrow, deep beams, especially beams of I-section or channel-section with tension and compression flanges connected by a thin web. Whether it is a primary cause of failure or a final manner of failure, sidewise buckling results in a clearly marked and generally quite sudden failure of a beam.

(3) Failure in an I-beam or a channel-beam may occur by excessive shearing stress in the web, or by buckling of the web under the compressive stresses which always accompany shearing stress. If the shearing fibre stress in the web reaches a value as great as the yield-point strength of the material in shear, beam failure may be expected, and the manner of failure will probably be by some secondary buckling or twisting action. The inclined compressive stress always accompanying shear may reach so high a value that the buckling of web of the beam is a primary cause of failure. Danger of web failure as a primary cause of beam failure exists, in general, only for short beams with thin webs.

(4) In the parts of beams adjacent to bearing blocks which transmit concentrated loads or reactions to beams, high compressive stresses may be set up, and in I-beams or channel-beams the local stress in that part of the web nearest a bearing block may become excessive. If this local stress exceeds the yield-point strength of the material at the junction of web and flange, the beam may fail primarily on account of the yielding of the overstressed part and finally by a resulting twisting action of the beam.

Yield-point of Structural Steel in Tension and in Compression.—For I-beams the yield-point strength of the steel is, perhaps, the most important physical characteristic. The tension test is the most usual test for determining the physical properties of structural steel, and the yield-point reported (frequently but incorrectly called the "elastic limit") is the yield-point in tension. As flexural members of structural steel may fail through the yielding of the compression fibres, the yield-point of structural steel in compression seemed worthy of investigation. A considerable amount of test data are available on this subject, and the conclusion seems fairly well established that for the softer grades of steel the yield-point determined for tension is about the same as the yield-point in compression.

Failure of I-beams by Direct Flexure.—In studying the failure of I-beams care must be exercised to distinguish between the primary failure and the final failure as judged by the shape of the beam after the test. Beams in which the primary cause of failure is excessive flexural stress not infrequently buckle sidewise *after* this excessive stress has weakened the flanges of the beam; in other cases the yielding of the flanges allows stress to be transferred to the web, which then may twist or buckle. If a beam is held firmly against sidewise bending and has a thick web, the final failure under a load as applied in a testing machine will be by gradual sagging, and the exact instant of failure will not be very clearly marked. Under excessive flexural fibre stress the time of application of load affects the deformation under load, and a beam may carry momentarily a load applied in a testing machine larger than that which, if continued for several days, would cause collapse of the beam.

Under long-continued static load the deformation of beams having their extreme fibres stressed to the yield-point of the material, increases for some time, frequently for several days, but the member does not necessarily fail.

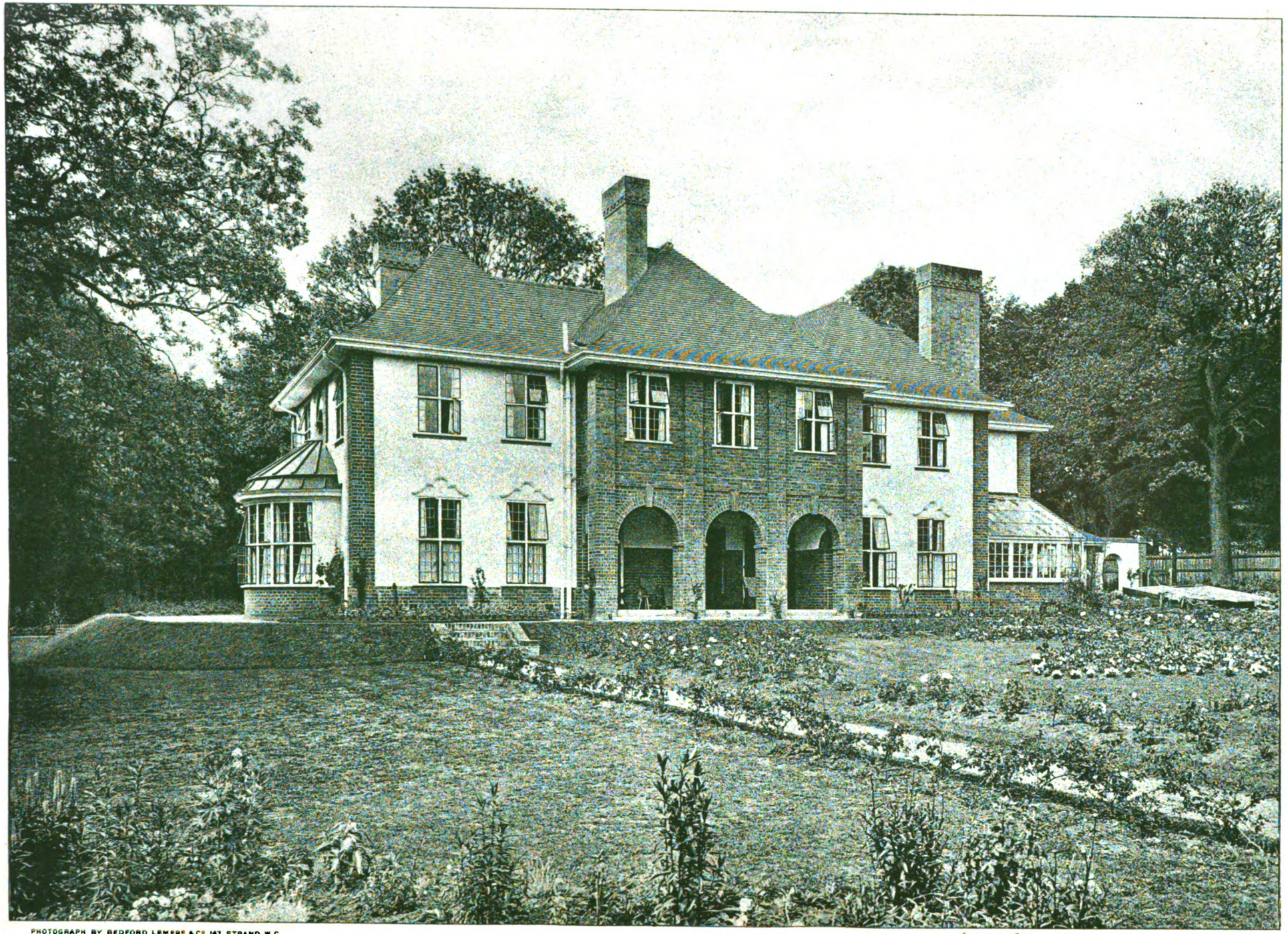
The excessive deflection of beams found when fibres are stressed beyond the yield-point, and the possibility of collapse, emphasise the conclusion that for I-beams the yield-point strength of the material in the flanges should be regarded as the ultimate fibre stress in flexure. It is especially absurd to regard the ultimate tension strength of steel as the ultimate fibre stress, as even under the most favourable conditions of service this fibre stress cannot be developed before the I-beam collapses.

Inelastic Action of I-beams under Low Stress.—Many recent writers on structural design have pointed out that in practically all steel structures the bending of beams and rods incidental to the erection of the structure and the use of drift pins in aligning rivet holes cause local stresses in excess of the yield-point strength of structural steel. These local stresses do not, however, cause the failure of the whole member. In Marburg's tests of I-beams, and in those made at the University of Illinois, frequent evidences of slight inelastic action at low stresses were observed. It is believed, however, that this inelastic action is the result of local stress, and that it does not indicate the limit of load-

* Abstract of bulletin issued by the Engineering Experiment Station of the University of Illinois, U.S.A.

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carrying capacity for the beam as a whole. In support of this belief the following facts are presented:—

(1) In any test of material, if apparatus of sufficient delicacy is used inelastic action can be detected at comparatively low stresses.

(2) The physical properties of the material in various places in an I-beam may vary considerably; the material at the root of the flange is usually weaker than the material in the flange or than the material in the web, and inelastic action of the beam under low stresses may be due in part to yielding of this weaker material while the flange material can develop further strength.

(3) If the load which at first application causes inelastic action be removed and reapplied, the second cycle of loading and removal of load will usually show much less inelastic action than is shown during the first cycle of loading and unloading, and successive cycles will show gradual improvement of the elastic qualities of the beam.

For static load or for loads repeated at infrequent intervals, and always acting in the same direction, local inelastic action does not seem important. The writer has not been able to discover any record of the failure by fatigue of metal originally sound in a bridge, building, or other structure designed to carry static load; but in structures under loads applied successively in opposite directions, or loads rapidly repeated many millions of times, it might be expected that local inelastic action may cause minute cracks or microscopic flaws which, spreading, would eventually cause the failure of the structure by fatigue of metal.

Buckling of Compression Flanges of I-beams: Equivalent Column Length.—In an I-beam under a load which acts in the plane of the web there is a tendency for the compression flange to buckle sidewise, due to column action. On account of this column action the ultimate available fibre stress for a beam with no restraint against sidewise buckling, as calculated by the flexure formula, may be less than the yield-point strength of the material in the flanges. Column action in a beam is more complex than the action of a strut under direct compression. In a strut a compressive load P is applied at one end, and the average stress over the cross-section due to the direct compression is the same all along the strut. For a strut the average stress over any cross-section is given by the equation $f_c = \frac{P}{A}$, where P is the total compressive load, A the cross-sectional area of the strut, and f_c the average stress due to direct compression. In a beam the compressive stress in the extreme fibres of the compression flange due to flexural action varies according to the location of the section, increasing from zero at an end support (or point of inflection for a fixed-ended beam) to a minimum at some point in the span. The compression flange of the I-beam then may be regarded as a strut loaded with a large number of elementary loads dP applied at successive points along the span. Each elementary load or increment of load may be considered to produce an increment in the compressive stress of the flange. The value of the compressive stress at any section will then be the summation of the increments of compressive stress from the point of zero stress, or $f = \int df$. This stress f for the remotest fibre of any section will be very nearly equal to the flexural stress produced by the flexure of the beam, which stress is computed by the usual flexure formula $f = \frac{Mc}{I}$, in which M = the bending moment at the point of span considered, I = the moment of inertia of cross-section of beam, and c = distance from the neutral surface of the beam to the extreme compression fibre. To find the effect of this kind of column loading it will be necessary to deduce an expression for the value of the compressive stress due to column action which will be developed with a column loaded with increments of load as here considered.

For a strut under direct compression the average compressive stress developed at failure f_c may be expressed fairly well by the formula

$$f_c = f_e - k\frac{l}{r} \quad . \quad . \quad . \quad . \quad . \quad (1)$$

in which

f_e = a value of stress about equal to the yield-point strength of the material,

l = length of strut,

r = minimum radius of gyration of cross-section of strut,

k = an experimentally determined constant.

We may regard the term $k\frac{l}{r}$ in either of two ways: (1) as representing a reduction from f_e of available ultimate fibre stress in the strut, due to the effect of column action, or (2) as a fibre stress which is due to a bending action in the column, produced by the same load as produces f_c, and which, added to f_c, brings the extreme fibre stress up to f_e. By the second conception the stress f_e is the sum of the direct compressive stress f_c and the stress due to column bending.

For the purposes of this discussion it will be convenient to use the second conception—*i.e.*, to consider the last term as a stress produced by a bending action in the column. In the case of the I-beam, the stress in the remotest fibre of the compression flange on the edge having the highest compression may be considered to be made up of the sum of the flexural fibre stress f_1 (computed by the usual flexure formula, $f_1 = \frac{Mc}{I}$) and the column bending stress f'. This stress will be a maximum at the section where the bending moment will be a maximum, and at failure by side buckling of the flange we may consider that $f_e = f_1 + f'$, where f_1 is the computed flexural fibre stress at the dangerous section, and f_e has a value not greatly different from the yield-point of the material.

To determine the column bending stress f', it will be necessary to take into account the manner of application or of distribution of the assumed compressive loading along the length of the compression flange. At any point along the compression flange the column load may be taken to be the flexural fibre stress at that point, since by this conception the amount of the column load per unit of area of section is the flexural fibre stress. This flexural fibre stress increases from the point of zero bending moment in the beam to the dangerous section. To determine the effect of column action, the increment or differential of flexural fibre stress df applied along a differential of length of flange $d\lambda$ (which is the only column load which acts throughout the column length λ) will be considered as producing column bending stress at the dangerous section. This increment of load is applied at any two points A and A and acts upon a column of the length (the calculated flexural fibre stress being the same at A and A). The sum of all the loads on the whole length of column ($\int df$) will be the flexural fibre stress at the dangerous section (f_1). To determine the total column bending stress f' at the dangerous section A it will be necessary to make a summation of the effects of the increments of column load df over the length of flange to be considered. By analogy with the straight-line column formula, adopting q as the coefficient for the formula as applied to sidewise buckling of the flange, the term expressing the column bending stress will be of the form $q\frac{\lambda}{r'}$, where r' is the radius of gyration of a cross-section of the compression flange about a gravity axis parallel to the depth of the web. As the elements of column load df vary along the flange, and as the proportional effect of each elementary load as compared with the sum of all the loads must be used in the summation, it is necessary to introduce the ratio $\frac{df}{f_1}$ into the term. Then

$$f' = \int q\frac{\lambda}{r'}\frac{df}{f_1} = \frac{q}{r'}\int \lambda\frac{df}{f_1} \quad . \quad . \quad . \quad (2)$$

This is the column bending stress at the dangerous section.

It will be found convenient to consider this stress as equal to the column bending stress in an ordinary strut loaded with a load f_1, and having a length of ml, where m is a coefficient depending upon the method of loading and conditions of continuity and l is the length of the beam. ml may be called the equivalent column length. Equation (2) may then be written

$$f' = \frac{q}{r'}\int\frac{\lambda df}{f_1} = q\frac{ml}{r'} \quad . \quad . \quad . \quad . \quad (3)$$

The equation for the computed flexural fibre stress at failure due primarily to sidewise buckling will be

$$f_1 = f_e - q\frac{ml}{r'} \quad . \quad . \quad . \quad . \quad (4)$$

where f_e = a value not greatly different from the yield-point strength of the material in the flange.

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q = a coefficient of column action.

ml = the equivalent column length of the flange of the beam, the coefficient m being found by equation (3) for different loadings and different conditions of continuity.

r' = the radius of gyration of the compression flange about a gravity axis parallel to the web. For practical purposes r' may be taken as the radius of gyration of the I-section about a gravity axis parallel to the web.

From equation (3) an expression for ml may be written

$$ml = \int_{f_1} \frac{\lambda df}{f_1}.$$

It may help in integration to consider that $\int \lambda df$ is the same as the area under the curve of flexural stress for the full length of the beam in simple supported beams. Then, if f_a is the *mean* ordinate of the curve of flexural stress,

$$\int \lambda df = f_a l.$$

$$ml = \int \frac{\lambda df}{f_1} = \frac{f_a l}{f_1 l}$$

That is, the equivalent column length of the compression flange of an I-beam is equal to the span multiplied by the ratio of the mean flexural fibre stress in the compression flange to the flexural fibre stress in the compression flange at the dangerous section. For a uniformly loaded beam of constant cross-section m is found to be $\frac{2}{3}$. For a beam with a single load at any point between supports m is $\frac{1}{2}$.

Web Failure of I-beams.—I-beams and built-up girders of short span are sometimes in danger of failure by crippling of the web. Web failure may be caused in several ways: (1) The fibre stress in shear at the middle of the web may exceed the yield-point strength in shear of the web material. (2) Accompanying the shearing fibre stress at any point of the web is a compressive stress of equal intensity acting in a direction inclined at 45 degrees with the direction of the shearing stress, and this compressive stress may become so great as to cause buckling. (3) There may be an excessive compressive stress near the junction of web and flange and adjacent to a concentrated load or reaction.

Summary.—The following summary is given:—

(1) The yield-point strength, not the ultimate tensile strength, should be regarded as the ultimate fibre stress for structure steel in flexure.

(2) The yield-point strength of structural steel in compression is about the same as the yield-point strength in tension.

(3) The slight inelastic action which may be observed in steel I-beams under stresses as low as those used in practice is, in general, local in its effects, and does not indicate the load-carrying capacity of the I-beam if the load is not reversed in direction.

(4) The computed *ultimate* fibre stress for steel I-beams not restrained against sidewise buckling of the compression flange is given by the formula

$$f_1 = 40{,}000 - 60\ \frac{ml}{r'}$$

in which f_1 is the extreme fibre stress, in pounds per square inch, computed by the usual flexure formula, l is the length of span of beam in inches, r' is the radius of gyration of the I-section about a gravity axis parallel to the web, and m is a coefficient dependent on the method of loading, ml being a so-called equivalent column length. Values of m for various loadings are given. In no case should f_1 be taken greater than the yield-point strength of the material in the flanges. It should be borne in mind that f_1 of this formula is an ultimate, not a working value.

(5) A light system of sidewise bracing may so strengthen an I-beam that the full yield-point strength of the material will be developed before failure occurs, but a stiff bracing capable of resisting sidewise bending moment is necessary to prevent sudden failure by sidewise buckling, once the yield-point of the beam flanges is reached. Separators between the webs of I-beams do not furnish a stiff bracing against sidewise buckling.

(6) In investigating the safety of an I-beam as regards web failure three possible causes of failure should be considered:—

(*a*) Failure by shearing stress in the web. The yield-point strength of structural steel in shear should be regarded as the ultimate fibre stress for the web.

(*b*) Failure by buckling of web. The buckling strength of a strip of web inclined 45 degrees to the flanges as computed by Euler's formula for fixed-ended columns was developed in several tests without collapse of the web.

(*c*) Failure by compressive stress in the part of the web adjacent to a bearing block. The value of this stress may be roughly estimated from the formula given by Hudson,

$$f = \frac{P}{bt}$$

in which f_w is the fibre stress in compression in pounds per square inch, b is the length of bearing block in inches, t is the thickness of web in inches, and P is the concentrated load or the reaction in pounds. The yield-point strength of the material at the root of the flange of the I-beam should be regarded as the ultimate value for f_w.

ELECTRICALLY OPERATED CARRIAGE-DRIVE GATES.

ENGLISH country houses with their winding drives are a pride to all Englishmen, and an object for the admiration of visitors to these shores. Although beautifully wrought gates often play an important part in the scheme, their services are mainly æsthetic and not utilitarian. Indeed, to arriving cars and carriages their beauty, unless a lodge-keeper be installed, is sometimes lost, we fear, owing to impatience involved by the necessity for descending from the vehicle to open or close the gates. The lodge-keeper is, however, a figure who is dying out in these days when the tendency is towards productive labour. That the difficulty can be satisfactorily surmounted is evidenced at a country house in the North of England where a fine pair of gates is electrically operated by gear constructed by the Witton-Kramer Electric Tool and Hoist Co., Witton, Birmingham (for whom the General Electric Co., Ltd., 67 Queen Victoria Street, London, E.C., are the sole selling agents). The



GATES AT A COUNTRY HOUSE ELECTRICALLY OPERATED BY A "WITTON" MOTOR.

operating gear consists of a ½ horse-power "Witton" motor geared through a clutch to a mechanism for opening or closing the gates. The electric motor and mechanism are housed in a small tunnel underneath the gates—a small manhole situated to one side giving access. Power is supplied from the house installation, and the controlling switch is located in the garage. This controlling switch is of the reversing type, so that putting the switch in one position closes the gates, and putting it in another opens them. On completing the circuit the motor is started up and a solenoid

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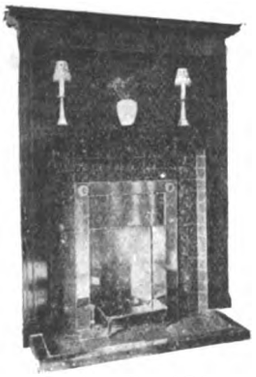
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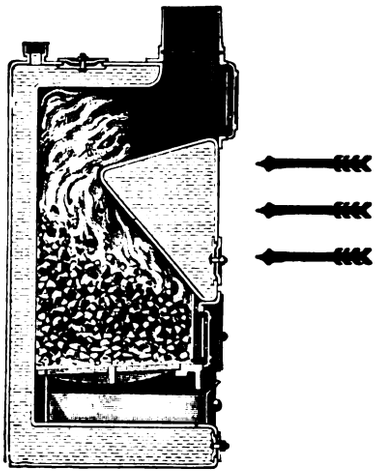
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circuit energised, thereby connecting the motor to the gate-opening mechanism through the clutch. The presence of this clutch, which is open when the motor is not at work, enables the gates to be opened or closed by hand when desired. Before leaving the garage the chauffeur opens the gates and, after driving through, signals by means of the horn to anyone who happens to be in the garage should he desire the gates to be closed immediately. On the other hand, when the gates are found closed on the return journey the sound of the horn gives the signal for the switch to be put to the opening position. It cannot be said that a gate-opening gear of this description would raise to a high pitch the enthusiasm of a supply authority to whose mains it might be connected, inasmuch as it is estimated that the gate can be opened over 500 times at a cost of 1*d*. With what interest the scheme is viewed in the surrounding districts may be gathered from the fact that within a few weeks of having been installed picture postcards of the gate were commanding a ready sale. Incidentally, of course, a scheme of this description is susceptible of any number of variations. It could be arranged so that by means of a time switch the gates were closed some few minutes after the departure of the car from the garage. Moreover, they could be controlled by means of a push button in the hall of the house or by a mechanism completing the electrical circuit due to the weight of the car pressing on it as the car reached the gates.

The gates were constructed by Messrs. Lockerbie & Wilkinson, Tipton, Staffs, and the operating mechanism by the Witton-Kramer Electric Tool and Hoist Co., Witton, Birmingham.

Correspondence

[*The Editor will not be responsible for the opinions expressed by Correspondents.*]

Capturing the Enemy's Trade.

SIR,—The letter of Mr. S. B. Caulfield in your issue to-day very pertinently gives one of the reasons for the success of our Teutonic competitors in the domain of commerce.

A characteristic and thorough antediluvian British system of nominating privileged persons to those positions for which they are unfitted by training and qualifications is both detrimental to national efficiency and unjust to those possessing the aptitude and technical knowledge a traveller should command.

But what chance has the efficient candidate, in face of our time-honoured practice, in appointing those whose deficiencies are hidden under the mantle of an influence sufficiently powerful to reject the trained man for the inferior article, whose chance would be small indeed in fair and open competition with the men willing and able to tackle the task of capturing the enemy's trade?

No stream can rise above its source, and our trade will get exactly what it deserves. There is a pocket borough in many of our business establishments to which no outsider need for a moment aspire. The Captain of Industry should put his own house in order, and see to it that the marshal's bâton may be found in the industrial conscript's knapsack, otherwise this country will certainly find that a hungry, lean, and democratised nation of efficients, possessing no privileged caste in business but that of the aristocracy of ability, will prove much more formidable to this country, when beaten, than they have been in the field.—Yours truly,

C. T. FREEMAN.

9 Molineaux Street, Edgware Road, W.: April 9, 1915.

School for Travellers.

SIR,—With great interest I have read Mr. Caulfield's letter in your paper. Most people say that a commercial traveller is not made but born. This statement is quite wrong, and I quite agree with Mr. Caulfield that the present British commercial traveller has no opportunity to learn his business, but ought to do so, the same as every mechanic, lawyer, architect, &c.

It may interest your readers to know that at the present moment there is a great practical scheme for promoting British trade in the Colonies and abroad on foot, the great success of which is bound to follow, as there will be no wait-and-see business attached to this scheme; but from the very first day that the actual working begins the results will be shown, inasmuch as the British manufacturer will actually receive his orders.

The interesting part of Mr. Caulfield's letter, however, is the following: Attached to this undertaking will also be the first and only practical training school in the world for commercial travellers. The management will be prepared to engage for each of their branches all over the world a certain number of commercial travellers' apprentices, from eighteen to twenty-one years of age. There will be no premium to pay. These young men will be allowed to choose any particular class of goods of any department they wish to learn to sell, but will have to stick to the department of their first choice.

This society for promoting British trade will handle every class of British manufactured goods. These young men will get a world-wide experience, get to know the markets, buyers, and languages, and, according to their abilities and intelligence, will be sent to the various depôts of the society in different countries, so as not to become one-sided. Every apprentice will have to serve conscientiously for two years, and proper indentures will have to be signed by the parents or guardians of such apprentice.

At the end of their apprenticeship they will receive the society's certificate of efficiency according to their qualifications, intelligence, and experience, when they should have no trouble of finding suitable remunerative employment as commercial travellers with the very best of firms. This arrangement ought to be a great asset to British commerce in general. CHARLES MARKS.

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BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Chester.—Three blocks of workmen's dwellings. Messrs. Dod & Dod, A.R.I.B.A., architects, Exchange Buildings, Liverpool.

DEVON.

Brixham.—Proposed isolation hospital.

Plymstock.—Park Cottage: addition. Mr. E. W. Lister, architect, Clock Tower Chambers, George Street, Plymouth.

DURHAM.

Crossgate Moor.—Workhouse: infirmary.

Durham.—House, No. 30 Hallgarth Street: additions, for Mr. G. Burton.

House, Sutton Street: additions, for Mrs. Hodgson.

Pelaw.—Clothing factory. Mr. L. G. Ekins, architect. West Blandford Street, Newcastle-upon-Tyne.

ESSEX.

Brentwood.—Baptist Chapel, King's Road.

Leigh Beck.—Council school. Mr. G. Topham Forrest, architect, Duke Street, Chelmsford.

Moulsham.—Proposed church hall.

HAMPSHIRE.

Gosport.—Smallpox hospital and alterations to present hospital (£1,200).

Portsmouth.—Tuberculosis hospital, Langstone. Mr. A. E. Tutte, architect, 58 London Road, North End.

Southampton.—Dairy and other works, Malmesbury Road. Messrs. Jurd & Sanders, architects, 25 Portland Street.

New Taunton's School, Highfield.

KENT.

Gravesend.—Council School, Cecil Road: additions. Mr. A. G. Smith, architect, 22 Windmill Street.

Maidstone.—Eight pairs of cottages, Upper Fant Road.

LANCASHIRE.

Bolton.—Billiards hall, Princes Street, for Mr. W. Russell.

Business premises, Raikes Road: additions, for Royal Sponge Cloth Company.

No. 263 Derby Street: additions, for Mr. W. Gaskell.

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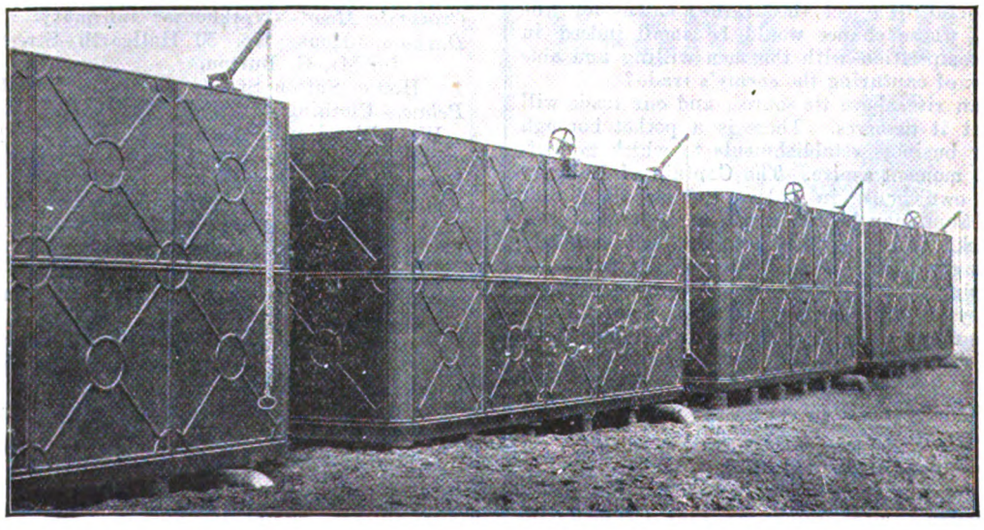
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ENGLAND—*continued.*

LANCASHIRE—*Bolton—continued.*

Two houses and shops in Ainsworth Lane, for Messrs. Leigh Brothers.
Two houses, Green Lane, for Mr. T. Woods.
Houses, Aldred Street: alterations, for Mr. J. D. Brooks.
Mill, off King Street. Mr. T. E. Smith, architect, Central Chambers, Fold Street.
Warehouse, Back Knowsley Street: extension, for Messrs. Golding & Son.

Longton.—Church school.

LEICESTERSHIRE.

Leicester.—Proposed drill hall, for Junior T.C.

LINCOLNSHIRE.

Grantham.—Proposed R.C. day school.
Grimsby.—Proposed new church, Old Clee.
Surfleet.—Three houses, for Spalding R.D.C. Mr. E. Thompson (of Enneth), contractor (£550).

MIDDLESEX.

Pinner.—R.C. Church.

NORTHAMPTONSHIRE.

Northampton.—Twenty workmen's cottages, Hollowell, for the Corporation.

SOMERSET.

Flax Bourton.—Workhouse Schools: additions and alterations as a mentally defective institution. Mr. G. T. Hine, F.R.I.B.A., architect, 35 Parliament Street, London.
King's Castle.—Proposed County Sanatorium.

STAFFORDSHIRE.

Cobridge.—Pottery, North Road: extensions. Messrs. Wood & Goldstraw (of Tunstall), architects.
Stafford.—Proposed cottage homes, for B.G.
Railway Station Sorting Office: completion (£7,000).
Walsall.—St. Matthew's Church: proposed girls' and infants' school.
Wolverhampton.—Technical school. Mr. W. A. Forsyth, F.R.I.B.A., architect, 309 Oxford Street, London, W.

SUFFOLK.

Ipswich.—Smallpox hospital, Foxhall Heath.

SURREY.

Egham.—Secondary school, High Street (£10,000). Mr. W. Watson (of Ascot), contractor.
Farnham.—Joint Isolation Hospital: additions.
Kingston-on-Thames.—Public elementary school for 1,000 places.

WARWICKSHIRE.

Bedworth.—Proposed church, Woodlands (£750).
Two houses, Bulkington Lane, for Mr. J. W. Johnson.
Berkswell.—House, Tile Hill, for Mr. G. Matthews (of Coventry). Mr. J. G. Tommey, builder.
Birmingham.—Proposed fog-signal factory, Drew's Lane, Ward End, for Messrs. Ludlow & Co.
Exhall.—House, Wheelwright Lane, for Mr. Dagley.
Foleshill.—House, Hurst Road, for Mr. Davis.
Walsgrave-on-Sowe.—Church Schools: proposed alterations.

WORCESTERSHIRE.

Moseley.—Proposed vicarage.

YORKSHIRE.

Barnoldswick.—Council school (1,050 places), Brogden Lane.
Bradford.—Proposed smallpox hospital, Odsal.
Dewsbury.—Working men's dwellings, Borough Park.
Great Driffield.—Hospital. Mr. B. B. Stamford, architect, County Hall, Beverley.
Halifax.—Ebenezer P.M. (new) Church.
Huddersfield.—Buildings, Market Street, Milnsbridge. Messrs. Lunn & Kaye, architects, 14 John William Street.
Middlesbrough.—Council school (£19,800).
Pontefract.—Buildings, Carleton Road. Mr. W. J. Tennant, architect, Ropergate Chambers.
Sheffield.—Public Baths, Glossop Road: improvements (£2,600).
St. Mary's R.C. Church, Mortomley. Mr. A. Hartley, architect, County Chambers, Castleford.
Electricity Works: buildings, Neepsend (£27,600) and sub-stations (£50,000).
Skipton.—Proposed smallpox hospital.

WALES.

Cardiff.—Divisional Labour Exchange office (£13,900).
Llangennech.—Railway Station, near Parc Howard, for G.W.R. Company.

SCOTLAND.

Ayr.—Tuberculosis hospital, Hunter's Avenue (£3,500).
Blairgowrie.—Shops and houses, Leslie Street: improvements. Mr. L. Falconer, architect, 27 Bank Buildings. Separate trade contractors.
Dundee.—House, Craigie Avenue: additions and alterations. Messrs. Thoms & Wilkie, FF.R.I.B.A., architects, 46 Reform Street.
House, Hazel Drive: addition, for Mr. J. W. Scott.
House, Dalkeith Road: additions. Messrs. Maclaren, Sons & Soutar, architects, 10 Reform Street.
Dunfermline.—Garage and offices, East Road, for the Autocar 'Bus Company (of Edinburgh).
Galashiels.—Proposed theatre. Mr. S. H. Lawson (of Newcastle-upon-Tyne), architect.
Irvine.—Double cottage, Waterside, for Mr. Caldwell (of Kilwinning), £800.
Methil.—Parish church (for 1,000 sittings).

IRELAND.

Dalkey.—Working-class houses (£10,500).

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 26,916. Nov. 22, 1913.—Antime Motteau, Garay 1278, Buenos Aires. Sash windows.

27,950. Dec. 4, 1913.—W. J. Dunn and H. B. Taylor, 189 St. James Street, Montreal. Wall paper pasting and trimming apparatus.

117. Jan. 2, 1914.—M. F. F. Aine, 61 rue de Bonnel, Lyon, France. Semi-automatic wood lathes.

2,593. Jan. 31, 1914.—A. J. Madden, Derby Road, Caulfield, Victoria, Australia. Cooking stoves.

2,708. March 14, 1914.—Joseph Harnett and R. L. Glasspool, Tunfield Nursery, Hoddesdon, Herts. System for heating by circulation of hot water.

7,087. March 20, 1914.—British Patent Surbrite Co., Ltd., and E. G. Meadway, 40 Trinity Square, London. Metallic paint.

7,109. March 20, 1914.—George Senseney, Etaples, Pas de Calais. Joining wood.

9,438. April 16, 1914.—W. F. White, 11 Gurney Road, Leytonstone Road, Stratford, E. Cowl and ventilator.

10,639. April 30, 1914.—C. M. Burnett, St. Katherine's, Clifton Road, Regent's Park, Shirley, Southampton. Ferro-concrete construction of buildings.

16,514. July 10, 1914.—F. J. Gibbons, St. John's Works, Church Lane, Wolverhampton. Casement stays.

23,552. Dec. 4, 1911.—South Metropolitan Gas Co. and Dean Chandler, 709 Old Kent Road, S.E. Gas ovens.

16,930. July 16, 1914.—West Disinfecting Company, 12 East 42nd Street, Manhattan, N.Y., U.S.A. Sanitary closets and the treatment of excrements in connection therewith.

22,869. Nov. 21, 1914.—E. C. Clausen, Govan, Saskatchewan, Canada. Door holders.

23,303. Nov. 30, 1914.—G. A. Hodson, Hathern Station Brick and Terra Cotta Company, Ltd., Hathern, near Loughborough, Leicester. Method of lubricating the clay column of brick-making machines.

499. Jan. 12, 1915.—W. J. Bennett, 50 Fairlop Road, Leytonstone, Essex. Damp-proof wood-flooring blocks.

693. Jan. 15, 1915.—Frank Pascall, the Interoven Stove Company, Ltd., 156 Charing Cross Road, London, W.C. Auxiliary grates for domestic stoves.

15,745. July 8, 1913.—George Knowling, Goat Wharf, Brentford, Middlesex. Reinforced block-work floors.

Any of the above specifications may be obtained from J. D. Roots & Co.

THE monthly board of the Nottingham General Hospital have completed arrangements for the erection of temporary buildings which will provide accommodation for an additional 150 beds. The total cost will be £3,000, of which the War Office are paying half. Two wards will be erected, each to accommodate seventy-five beds, and they will be approximately 150 feet in length, 33 feet wide, and 10 feet up to the eaves, the cubic space per bed being about 800 feet.

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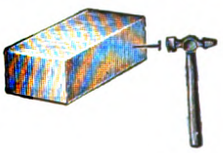
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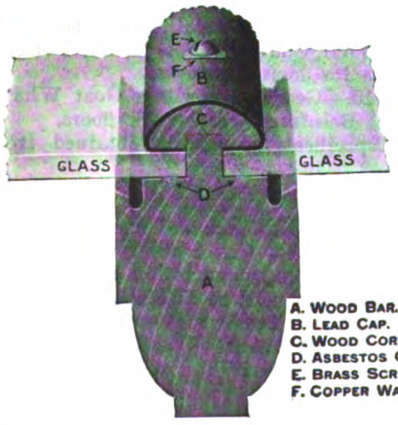
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THE
Architect and Contract Reporter.
FRIDAY, APRIL 16, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

Galemire (Whitehaven).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

Ireland.—The Louth County Council invite architects to submit designs in competition for new county offices, to be erected in Dundalk, and have appointed Professor William A. Scott, A.R.I.B.A., F.R.I.A.I., A.R.H.A., to act as their assessor. Conditions of competition may be obtained from the county secretary on receipt of a deposit of two guineas, which will be returned on receipt of a *bona-fide* design, or the return of the conditions within seven days. Mr. Charles McAlester, county secretary, Courthouse, Dundalk.

Stepney.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s*. deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

Whitehaven.—April 21.—The Town Council invite competitive designs for the laying out of the Coach Road site (6a. 1r. 25p.) within the borough and erection of houses thereon. The author of the design placed first in order of merit may be employed as architect on terms to be arranged, and if not so employed will receive a premium of thirty guineas. The author of the design placed second will receive twenty guineas, and the third ten guineas. Copies of conditions of competition and plan of site and other particulars can be obtained on application, upon depositing £2 2*s*. The Borough Surveyor, Town Hall, Whitehaven.

CONTRACTS OPEN.

Bingley.—For the bricklayer and joiner's work required in erection of a small shed at the Bowling Green Mills. Messrs. Nunns & Bracewell, architects, Bank Chambers, Bingley.

Blackwood (Mon.).—April 28.—For erection of premises at Oakdale Village, near Blackwood, for the Tredegar Industrial and Provident Society, Ltd. Send applications and £2 2*s*. deposit by April 17 to Mr. A. F. Webb, M.S.A., architect and surveyor, Tredegar Chambers, Blackwood.

Burnley.—April 21.—For cement pointing of joints of stonework of the mental wards at the workhouse, for the Guardians. Messrs. Keighley, architects, Nicholas Street, Burnley.

Byfleet.—April 26.—For the erection of an additional engine-house, gas-generating house, new workshop, and coal store adjoining the present pumping station, Byfleet village, together with engine beds and other building works, for the Chertsey Rural District Council. Mr. Charles Muggleton, Byfleet Corner, West Byfleet.

Carlisle.—For the various trades required in connection with extensions to bakery at Junction Street, for the Carlisle Co-operative Society. Mr. S. W. B. Jack, architect and surveyor, 19 Lowther Street, Carlisle.

Carshalton.—April 21.—For the construction of conveniences, together with the necessary internal fittings, at Carshalton Park, for the Urban District Council. Charge 5*s*. Mr. W. W. Gale, A.M.I.C.E., surveyor, District Council Offices, The Square, Carshalton.

Chipping Campden.—April 24.—For the several works in connection with enlarging the churchyard, Chipping Campden, comprising new stone walls, entrance gates, paths, roads, &c., for the Vicar and Churchwardens. Mr. W. L. Lissaman, architect, Islay House, Broadway, Worcs.

Easington Colliery.—For erection of a Wesleyan Methodist Chapel at Easington Colliery. Deposit £1. Mr. J. Wilson Hayes, architect, Wingate, Co. Durham.

Fareham.—May 12.—For alterations and additions to the school buildings, Fareham, for the Governors of Price's School. Deposit £2 2*s*. Mr. W. Cobbett, architect, West Street, Fareham, Hants.

Golcar.—April 19.—For the various trades required in erection of a house and shop in Leymoor Road. Mr. A. Shaw, architect, Golcar.

Harrogate.—For the various works required in erection of a residence at Leadhall Lane. Messrs. Walker & Collinson, architects, Exchange Buildings, Bradford.

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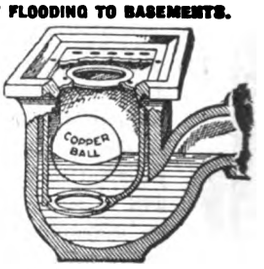
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HIGHTOWN.—For erection of two houses, Lumley Street, Hightown, Yorks. Mr. F. Scatchard, architect and surveyor, Midland Bank Chambers, Castleford.

HOLMFIRTH.—April 20.—For the building of the electricity works upon the market ground, for the Urban District Council. The contract will be let as a whole, excepting sundry special items. Mr. A. B. Mountain, engineer, the Electricity Works, St. Andrew's Road, Huddersfield.

HULL.—May 6.—For erection of offices, wheel shop, and alterations to workshops, &c., engine sheds, Dairycoates, for the North-Eastern Railway Company. Plans and specification may be seen and quantities and further information obtained upon application on or after the 20th inst. to Mr. Arthur Pollard, company's architect, York. Duplicate plans may be seen on application to the Stationmaster, Paragon Station, Hull. (See advertisement.)

IRELAND.—April 21.—For building ninety-one labourers' cottages, under eight contracts, and for roadmaking and other works, under one contract, for the South Dublin Rural District Council. A contractor may tender to build all the cottages and perform all the other works, or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the architect, under a penalty for delay. Mr. T. J. Byrne, clerk of the Council, 1 James Street, Dublin.

IRELAND.—April 22.—For alterations and additions to the boiler shop, Broadstone Station, Dublin, for the Midland Great Western Railway of Ireland Company. Deposit £1 1*s*. Mr. W. Purcell O'Neill, chief engineer to the company, Broadstone Terminus, Dublin.

IRELAND.—For erection and completion of a parochial house at Lavey, Co. Derry, for the Rev. M. O'Neill, P.P. Mr. J. J. M'Donnell, M.R.I.A.I., architect, 27 Chichester Street, Belfast.

IRELAND.—April 22.—For additions to station buildings at Wilkinstown, for the Midland Great Western Railway Company of Ireland. Charge for plans and specification, 2*s*. 6*d*. Mr. W. Purcell O'Neill, chief engineer, Broadstone Terminus, Dublin.

IRELAND.—May 3.—For the construction of an overline bridge and approaches at Finaghy, near Belfast, for the Great Northern Railway Co. (Ireland). Deposit £2 2*s*. The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

LEEDS.—April 21.—The City of Leeds Education Committee invite tenders for the repairs to buildings and furniture for the period ending September 30, 1915, in separate trades, as follows: Bricklayer and mason, carpenter and joiner, plumber, slater, plasterer, smith and founder, heating engineer, concretor, and painter. The Architect's Section, Education Offices, Leeds.

LEEDS.—April 22.—For alterations to the central lending library, including the provision of new bookcases and alterations to the existing bookcases and counters, for the Libraries and Arts Committee. Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

LISKEARD.—April 20.—For alterations and additions to premises in Castle Hill. The Co-operative Society, Liskeard.

LONDON.—April 20.—For building a new school for 335 girls at Tulse Hill, for the Governors of St. Martin's High School for Girls, Charing Cross. Send applications and £1 deposit by April 20. Messrs. G. T. Hine & H. Carter Pegg, 35 Parliament Street, Westminster.

LONDON.—April 20.—For erection of a booking office at Paddington Station, for the Great Western Railway Company. The Engineer at Paddington Station, London, W.

LONDON.—May 10.—For the foundations and concrete retaining wall in connection with the new General Post Office East, London, E.C., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s*. H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—May 11.—For steel constructional work in the extension of power house, for the St. Pancras Borough Council. Deposit £2 2*s*. Drawings may be inspected at 57 Pratt Street, Camden Town, N.W.

LOSTWITHIEL.—April 24.—For erection of a dwelling-house, for Mr. J. T. Strout, South Winnow, Lostwithiel. Messrs. F. C. Jury & Son, architects and surveyors, St. Austell, Cornwall.

LOWCA.—April 24.—For the various works required in the erection and completion of twenty-five houses at Lowca, Cumberland, for the Workington Iron and Steel Company, Ltd. Mr. C. W. Eaglesfield, architect and surveyor, Gordon Street, Workington.

MILNSBRIDGE.—April 19.—For the various works required in erection of additions to central store, stables, &c., in Market Street, for the Milnsbridge Perseverance Co-operative Society, Ltd. Messrs. Lunn & Kaye, architects and surveyors, Huddersfield and Milnsbridge.

MILNSBRIDGE.—April 30.—For the various works required in erection of 24 dwelling-houses, in five separate blocks, at Cowlersley, Milnsbridge (part of the Storth estate housing scheme, under the Housing of the Working-Classes Acts), for the Linthwaite Urban District Council. The mason's work will be for drainage and excavations for basements, and for labour only in walling "Winget" concrete blocks. Other trades as usual. Contractors are requested to tender for the works required for the 24 houses together, and also in blocks. Mr. J. Ainley, architect, Chapel Street, Slaithwaite.

MORECAMBE.—April 20.—For the whole or separate trades required in erection of new shop and premises, Lancaster Road, for the Lancaster and District Co-operative Society, Ltd. Mr. R. Jackson, Licentiate R.I.B.A., architect and surveyor, 32 Market Square, Lancaster.

NEWLYN (CORNWALL).—April 28.—For the construction of a reinforced-concrete face wall to part of the existing North Pier, Newlyn Harbour, for the Newlyn Pier and Harbour Commissioners. The length of pier to be faced is constructed in openwork reinforced concrete. Parties tendering are required to submit their own designs and calculations for the details of the construction. Deposit £1. The Clerk to the Commissioners, Public Buildings, Penzance, or Messrs. Douglass, Lewis & Douglass, the engineers to the Commissioners, 15 Victoria Street, Westminster, London, S.W.

ST. HELENS.—April 26.—For the plumbing, gasfitting, glazing, and painting required in connection with erection of the Allanson Street Council school, for the St. Helens Education Committee. Deposit £1 1*s*. Messrs. Biram & Fletcher, architects, George Street, St. Helens.

ST. IVES.—For erection of motor garage at St. Ives. Mr. H. J. Softley, surveyor, St. Ives, Hunts.

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SCOTLAND.—April 29.—For the wright and joiner works required in connection with the proposed erection of sanatorium and children's home at Southfield, near Mearns, for the Glasgow Corporation. Deposit £1 1*s*. The Office of Public Works, 64 Cochrane Street, Glasgow.

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WELLS-NEXT-THE-SEA.—For building a sub-postmaster's house and alterations to the post office at Wells-next-the-Sea, Norfolk. Deposit £1 1*s*. Mr. W. J. Dunham, architect and surveyor, Victoria Chambers, Bank Plain, Norwich.

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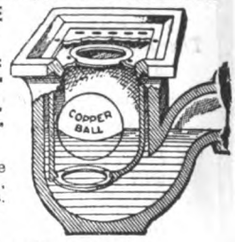


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HIGHTOWN.—For erection of two houses, Lumley Street, Hightown, Yorks. Mr. F. Scatchard, architect and surveyor, Midland Bank Chambers, Castleford.

HOLMFIRTH.—April 20.—For the building of the electricity works upon the market ground, for the Urban District Council. The contract will be let as a whole, excepting sundry special items. Mr. A. B. Mountain, engineer, the Electricity Works, St. Andrew's Road, Huddersfield.

HULL.—May 6.—For erection of offices, wheel shop, and alterations to workshops, &c., engine sheds, Dairycoates, for the North-Eastern Railway Company. Plans and specification may be seen and quantities and further information obtained upon application on or after the 20th inst. to Mr. Arthur Pollard, company's architect, York. Duplicate plans may be seen on application to the Stationmaster, Paragon Station, Hull. (See advertisement.)

IRELAND.—April 21.—For building ninety-one labourers' cottages, under eight contracts, and for roadmaking and other works, under one contract, for the South Dublin Rural District Council. A contractor may tender to build all the cottages and perform all the other works, or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the architect, under a penalty for delay. Mr. T. J. Byrne, clerk of the Council, 1 James Street, Dublin.

IRELAND.—April 22.—For alterations and additions to the boiler shop, Broadstone Station, Dublin, for the Midland Great Western Railway of Ireland Company. Deposit £1 1s. Mr. W. Purcell O'Neill, chief engineer to the company, Broadstone Terminus, Dublin.

IRELAND.—For erection and completion of a parochial house at Lavey, Co. Derry, for the Rev. M. O'Neill, P.P. Mr. J. J. M'Donnell, M.R.I.A.I., architect, 27 Chichester Street, Belfast.

IRELAND.—April 22.—For additions to station buildings at Wilkinstown, for the Midland Great Western Railway Company of Ireland. Charge for plans and specification, 2s. 6d. Mr. W. Purcell O'Neill, chief engineer, Broadstone Terminus, Dublin.

IRELAND.—May 3.—For the construction of an overline bridge and approaches at Finaghy, near Belfast, for the Great Northern Railway Co. (Ireland). Deposit £2 2s. The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

LEEDS.—April 21.—The City of Leeds Education Committee invite tenders for the repairs to buildings and furniture for the period ending September 30, 1915, in separate trades, as follows: Bricklayer and mason, carpenter and joiner, plumber, slater, plasterer, smith and founder, heating engineer, concretor, and painter. The Architect's Section, Education Offices, Leeds.

LEEDS.—April 22.—For alterations to the central lending library, including the provision of new bookcases and alterations to the existing bookcases and counters, for the Libraries and Arts Committee. Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

LISKEARD.—April 20.—For alterations and additions to premises in Castle Hill. The Co-operative Society, Liskeard.

LONDON.—April 20.—For building a new school for 336 girls at Tulse Hill, for the Governors of St. Martin's High School for Girls, Charing Cross. Send applications and £1 deposit by April 20. Messrs. G. T. Hine & H. Carter Pegg, 35 Parliament Street, Westminster.

LONDON.—April 20.—For erection of a booking office at Paddington Station, for the Great Western Railway Company. The Engineer at Paddington Station, London, W.

LONDON.—May 10.—For the foundations and concrete retaining wall in connection with the new General Post Office East, London, E.C., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—May 11.—For steel constructional work in the extension of power house, for the St. Pancras Borough Council. Deposit £2 2s. Drawings may be inspected at 57 Pratt Street, Camden Town, N.W.

LOSTWITHIEL.—April 24.—For erection of a dwelling-house, for Mr. J. T. Strout, South Winnow, Lostwithiel. Messrs. F. C. Jury & Son, architects and surveyors, St. Austell, Cornwall.

LOWCA.—April 24.—For the various works required in the erection and completion of twenty-five houses at Lowca, Cumberland, for the Workington Iron and Steel Company, Ltd. Mr. C. W. Eaglesfield, architect and surveyor, Gordon Street, Workington.

MILNSBRIDGE.—April 19.—For the various works required in erection of additions to central store, stables, &c., in Market Street, for the Milnsbridge Perseverance Co-operative Society, Ltd. Messrs. Lunn & Kaye, architects and surveyors, Huddersfield and Milnsbridge.

MILNSBRIDGE.—April 30.—For the various works required in erection of 24 dwelling-houses, in five separate blocks, at Cowlersley, Milnsbridge (part of the Storth estate housing scheme, under the Housing of the Working-Classes Acts), for the Linthwaite Urban District Council. The mason's work will be for drainage and excavations for basements, and for labour only in walling "Winget" concrete blocks. Other trades as usual. Contractors are requested to tender for the works required for the 24 houses together, and also in blocks. Mr. J. Ainley, architect, Chapel Street, Slaithwaite.

MORECAMBE.—April 20.—For the whole or separate trades required in erection of new shop and premises, Lancaster Road, for the Lancaster and District Co-operative Society, Ltd. Mr. R. Jackson, Licentiate R.I.B.A., architect and surveyor, 32 Market Square, Lancaster.

NEWLYN (CORNWALL).—April 28.—For the construction of a reinforced-concrete face wall to part of the existing North Pier, Newlyn Harbour, for the Newlyn Pier and Harbour Commissioners. The length of pier to be faced is constructed in openwork reinforced concrete. Parties tendering are required to submit their own designs and calculations for the details of the construction. Deposit £1. The Clerk to the Commissioners, Public Buildings, Penzance, or Messrs. Douglass, Lewis & Douglass, the engineers to the Commissioners, 15 Victoria Street, Westminster, London, S.W.

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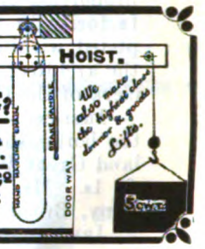
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West Vale.—For erection of a dwelling house. Messrs. Medley Hall & Son, architects and surveyors, 1 Harrison Road, Halifax.

Whitwood Mere.—For erection of semi-detached villas, Lumley Street, Whitwood Mere, Yorks, for Mr. Parker. Mr. A. Hartley, architect and surveyor, County Chambers, Castleford.

Whitchurch.—April 20.—For building the Dods Green Wesleyan Chapel. Rev. T. Barron, St. John's Manse, Whitchurch.

TENDERS.

ACKWORTH.

For erection of piggeries at Poplar Farm, Ackworth, near Pontefract. Messrs. Garside & Pennington, architects, Pontefract.

Lister Brook & Co., Ltd., Brighouse (*accepted*)	£115 0 0

BISHOP'S STORTFORD.

For alterations and additions to Northgate County Council School, for the Hertfordshire County Council. The County Surveyor. Quantities by Mr. W. E. K. Palmer, 7 Duke Street, Adelphi, W.C.

Day & Son	£4,270 0 0
Glasscock & Son's Successors	4,240 3 1
Robinson	4,213 7 10

BOLTON-ON-DEARNE.

For ninety-nine dwelling houses of three types, and three dwelling houses and shops in Furlong Road, Bolton-on-Dearne, for the Urban District Council. Messrs. Garside & Pennington, architects, Pontefract.

Contract No. 1.

Accepted tenders, subject to the Local Government Board's Approval.

Harold Hirst, builder, Birkenshaw	£9,166 0 0
J. S. Teanby & Son, Ltd., joiners, Sheffield	5,396 17 0
E. Walker & Co., plumbers, Heckmondwike	3,469 0 0
W. P. Allison, slater, Castleford	1,220 0 0
J. Iredale & Son, plasterers, Birstall	1,059 0 0
R. Wheatley & Son, painters, Pontefract	408 0 0

For 194 dwelling houses of three types, and five dwelling houses and shops, on Barnsley Road, Goldthorpe, for the Urban District Council. Messrs. Garside & Pennington, architects, Pontefract.

Contract No. 2.

Accepted tenders, subject to the Local Government Board's Approval.

Stubbings & Fell, builders, Sutton-in-Ashfield	£18,090 0 0
J. S. Teanby & Son, Ltd., joiners, Sheffield	10,605 13 0
E. Walker & Co., plumbers, Heckmondwike	6,289 0 0
W. P. Allison, slater, Castleford	2,400 0 0
J. Iredale & Son, plasterers, Birstall	2,084 0 0
R. Wheatley & Son, painters, Pontefract	796 0 0

BOURNEMOUTH.

For the erection of the Westbourne branch library, for the Corporation.

Jones & Seward	£2,127 0 0
F. Hoare & Sons	2,089 0 0
Shears & Sons	2,075 0 0
Hayter & Son	2,051 0 0
J. E. Mitchell	2,025 0 0
Jones, Wallace & Sons	1,996 0 0
Jenkins & Sons	1,983 0 0
F. A. Grigg & Son	1,976 10 6
McWilliam & Son	1,947 0 0
J. & W. Hayward	1,920 0 0
Barnes & Pond, Bournemouth (*accepted*)	1,887 0 0

CHESTER-LE-STREET.

For carrying out street works in connection with the first portion of the Council's housing scheme.

J. Douglas, Newcastle-on-Tyne (*accepted*)	£2,520 6 9

FALMOUTH.

For erection of steam laundry at Greenbank, for Mr. R. W. Langman. Mr. C. W. Parkes Lees, architect, Lanteglosby-Fowey.

Thomas & Sons	£2,194 16 0
R. Pickett, Ilfracombe (*accepted*)	1,764 4 0

GOLCAR.

For the various trades (except mason's) required in erection of four dwelling houses in Swallow Lane. Mr. A. Shaw, architect, Golcar.

Accepted tenders.

Wrigley & Beaumont, carpenters and joiners, Hoylehouse, Linthwaite.

Murrant & Smith, plumbers and electricians, Townend, Golcar.

Wilson Armitage, plasterers and painters, James Street, Golcar.

Thomas Sutcliffe & Sons, slaters, Hoylehouse, Linthwaite.

PONTEFRACT.

For erection of house in Carleton, Pontefract, for Mr. D. Sainter.

Wm. Horner and Others, Pontefract (*accepted*)	£484 8 9

RISHWORTH.

For erection of eight artisan dwellings at Rishworth, Yorks. Messrs. R. Horsfall & Son, architects, Halifax. Quantities by the architects.

Accepted tenders.

Helliwell & Shaw, excavators and masons, Sowerby Bridge	£1,060 0 0
H. Whiteley, carpenter and joiner, Rishworth	410 0 0
J. Stafford, plumber and glazier, Sowerby Bridge	178 15 0
Whiteley & Berry, plasterers and slaters, Sowerby Bridge	170 0 0

SOUTH KIRKBY.

For the erection of twenty-two dwelling houses at South Kirkby, near Wakefield. Messrs. Garside & Pennington, architects, Pontefract.

Lister Brook & Co., Ltd., Brighouse, Yorks (*accepted*)	£4,774 0 0

For carrying out street works. Messrs. Garside & Pennington, architects, Pontefract.

Lister Brook & Co., Ltd., Brighouse (*accepted*)	£757 0 0

TADWORTH.

For the erection of cottages at Tadworth, for the Epsom Rural District Council.

Wallis (*accepted conditionally*)	£2,431 0 0

WALES.

For erection and completion of public lavatories and fire-hose station at Caerau, for the Maesteg Urban District Council. Mr. S. J. Harpur, M.I.M.E., C.E., architect, Maesteg.

Gaylard	£584 3 1
Lewis	579 0 0
Broadfoot	508 13 6
Prothero	486 12 7

Messrs. George Pearson & Son, architects and surveyors, 212 Upper Thames Street, E.C., have dissolved partnership owing to the retirement of Mr. George Pearson, A.R.I.B.A. The practice will be carried on by Mr. J. Herbert Pearson, M.S.A., at the same address under the name of Geo. Pearson & Son.

The fourteenth-century tombs at Allhallows Barking have been examined by the secretary of the Society for the Protection of Ancient Buildings, who considers that they are suffering from active decay owing to damp and dust. He has written on the subject to the Vicar. Professor Lethaby has also expressed the view that the decay is active, and he suggests that the tombs should be freed from dust, and coated with a thin layer of wax. This suggestion will be adopted. The tombs are of Purbeck marble.

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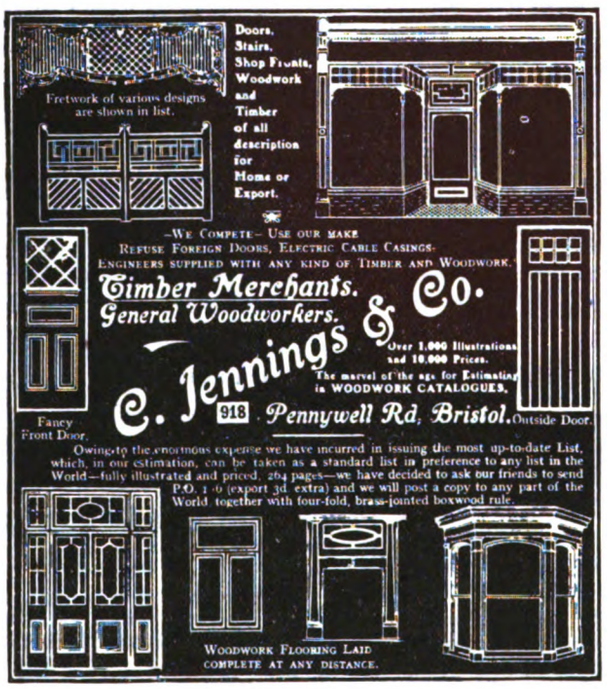
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DUBLIN HOUSING.

The Housing Committee of the Dublin Corporation has issued a report relative to the one submitted by Mr. Raymond Unwin and Professor Patrick Geddes, in reply to the order of the Municipal Council of August 10, 1914. Mr. Unwin and Professor Geddes recommended the Corporation to acquire land on the outskirts of the city area, and build there working-class houses of reasonable accommodation, provided with gardens; to re-build the ruined or semi-ruined buildings existing along the frontage of roads already made and in use, working as far as possible street by street, and combining with this process a general campaign for the improvement of each street; to consider street improvements so as to open up deteriorated or derelict areas of the city, and improve connections which will facilitate the gradual distribution of the population in a more healthy manner; and in conjunction also with the clearing of congested areas behind the main streets, so as to improve the condition of the buildings fronting upon those streets, to reduce excessive density of population where it exists, to provide the necessary playgrounds so that the children may not have to play in the gutters, and to let in light and air by means of open space, garden, or allotment ground. Where areas required clearing of too great a size for the whole of the ground to be devoted to open spaces, the town-planning experts recommended that, so far as it might be desirable, important links for traffic should be carried through them as part of the street-improvement system; but that apart from these required traffic streets the land should be developed for building purposes with the minimum amount of expenditure in street works by planning of squares of houses accessible from the existing main roads by means of footpaths or inexpensive carriage drives. Pending the acquisition of increased powers for dealing with derelict property, they suggested that full use should be made of all existing powers to compel owners to deal with the property themselves; that a definite policy for securing ample powers should be initiated, so that owners might know what they had to expect, and that at the same time the Corporation should express themselves willing to consider reasonable offers for the purchase of decayed buildings and derelict sites having a frontage to existing through roads. While it might be necessary to meet exceptional local needs to build a certain number of houses of very limited accommodation, and while small houses with very few rooms might be necessary to meet the needs of old people and other exceptional cases, the experts recommended that in the main good houses of adequate accommodation for a working-class family were most urgently needed in Dublin, and that certainly the majority of houses to be built should be of this class.

As the report of Mr. Unwin and Professor Geddes contained very important statements in relation to the Dublin housing problem, the Housing Committee referred it to a special committee for consideration. The sub-committee's report, with which the Housing Committee concurs, is now laid before the Council. The committee at the outset tender to Messrs. Unwin and Geddes sincere thanks for their elaborate and lengthened report upon practically the whole of the Metropolis, the resolution adopted by the Council asking only for their views upon the Beresford Street and Church Street, and Ormond Market and Trinity Ward schemes. They were under the impression that the report of the housing experts would deal with specific economic advantages regarding the lay-out of scheme, with detailed plans of more roomy dwellings for the same price as is estimated for those which the committee propose to provide, or, at any rate, an inconsiderable amount over that usually estimated. They regret that no such information was vouchsafed. The committee proceed to make some detailed observations upon the experts' report under the heads of delay, density, development, rent, accommodation, selection of sites, finance, and general. Regarding the general question of opening up new connections, it is stated that the borough surveyor at the recent inquiry intimated that in future he would see the survey of each site in the initial stage, so as to make provision for such eventualities. Mr. Cowan, of the Local Government Board, specially indicated the necessity for this, and the committee are in entire agreement with the view of the housing experts on this matter, but add that it was already anticipated by Mr. Cowan and the borough surveyor. Under the head of finance the committee direct the attention of the Council to the fact that, if their books are to be balanced under existing conditions, the loss to the rates upon the proposals advocated in the Departmental Commission's report would be about £25,000 a year. While they do not urge this as a reason against the financial recommendations of the report, they consider that it is due to the Housing Committee to furnish this information to the Council.

Generally, the sub-committee state that they are disappointed with the report of Messrs. Unwin and Geddes. In their view the experts have approached and reported upon the subject from an almost exclusively town-planning point of view. The committee have always considered the necessity of relieving the 60,000 people at present housed in single-room dwellings. Mr. Unwin and Professor Geddes have looked at the matter from the point of view of garden cities, and in one instance compared the death-rate of the worst and best wards with the garden suburbs in Birmingham, without taking into consideration the relative comforts which the different wages can buy. While considering the average site and development cost to be excessive when density is high, as against the cost when density is low, they have lost sight of the families left in single-room tenements without any of the advantages possessed by those housed, however densely, in self-contained cottages. In their report Messrs. Geddes and Unwin say: "We recognise that a considerable proportion of the population of Dublin, owing to their exceedingly low wages, must be housed in the central areas of the town, and in houses of low rental, but we submit that the best policy to adopt in order to help these people is to remove to better houses built on cheaper virgin soil on the outer areas within the city boundary the very considerable number who could and, if they had the chance, would live there." The committee cannot see the force of recognising a necessity and adopting a means which the recognition of that necessity must negative. The general tendency of the report is to consider Dublin as similarly circumstanced to an industrial English city. The committee are not in a position to recommend the adoption of the experts' suggestion regarding the laying-out of the Beresford Street and Church Street areas. If they exclude the poverty problem, and build only for the economic class, which is the only conclusion the committee can draw from the report, a serious responsibility would rest on the Housing Committee, which the sub-committee apprehends the present members are unwilling to bear. While they accept the paper ideal of garden suburbs, they must, from their experience, give expression to the opinion that it is impossible for a man earning from 25*s.* to 30*s.* a week to pay 6*s.* 6*d.* a week rent, and tram fares to and from his work. The Tram Company seems unwilling to provide cheaper fares. Apart from this, most of the workers wish to live in the city; and, whatever criticism may be directed towards any of the dwellings hitherto erected, there has usually been five times the number of applicants for the number of cottages to let, and the waiting lists are always well filled.

Messrs. Patman & Fotheringham, Ltd., building contractors and decorators, of Park Street and Liverpool Road, Islington, N., and Theobalds Road, Holborn, W.C., having erected commodious and more convenient new offices, adjacent to their Park Street works, have transferred their office staff from their Liverpool Road premises to the new offices at Park Street. The office addresses in future will be Park Street, Islington, N., and Theobalds Road, Holborn, W.C.

The Council of Liverpool University invite applications on or before May 10 for the Professorship of Civic Design which carries with it a stipend of £400 a year. The appointment will commence on October 1, 1915, and will be for four years. Private practice may be continued under certain conditions, with the proviso that it does not interfere with the duties of the chair. The professor will be responsible (*a*) for the conduct and direction of research into the problems connected with the design and development of towns, such research being held to include the production of drawings of schemes for the treatment of specific problems, as well as critical and historic surveys of existing work; (*b*) the publication of the results of this research; (*c*) the provision and supervision of instruction on the subjects of the chair; (*d*) to take such part in the degree and other examinations of the University as the Council may determine, and to hold or be responsible for such terminal examinations as the Faculty of Arts may approve.

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HEATING AND VENTILATING BY ELECTRICITY.

FROM at least one point of view the present would appear to be a by no means unfavourable moment to introduce new ideas to the world of building. Many professional men have now some leisure to look about them and reconsider their established views on the more practical questions of a building and its equipment. Architects are sometimes accused of being too conservative and hostile to change, whereas the real cause of any such tendency is a strong disinclination to take risks with their client's money by adopting novelties about which they have not had the time to make personal investigation.

A new system of heating and ventilating by electricity, to which we would draw attention, has recently been put on the market by the Credenda Conduits Co., Ltd., of Aston, Birmingham. Architects in London may see a typical installation in operation at the showrooms of the company's agents, Messrs. Baxter & Caunter, Ltd., 219 Tottenham Court Road, W.C., where the conditions are none too favourable. The showroom heated has 16,000 cubic feet of air. The plant consists of an electric heater with a maximum loading of 12 units, three switches giving five different heats, the various loadings being 2, 4, 6, 8, and 12 units; 7½ in. centrifugal fan, ¼-h.p. Newton motor. It is found that the temperature can be raised 10 or 12 degrees F. in the first hour by running the heater at its full loading of 12 units. This usually brings the temperature to approximately 60° F., and this is maintained with a consumption of from 2 to 4 units. The average cost of heating the showroom is 4*d.* per hour (current at 1*d.* per unit). The cost of the installation complete, with the necessary ducts for distributing the air, is about £75.

We think it will be admitted that these figures augur well for the success of the system. The company are prepared to undertake an installation into any kind of building. Full particulars may be had as to the capacity of their various plants, together with the cost of running per hour.

BUILDING AUSTRALIA'S CAPITAL.

WORK is proceeding satisfactorily, it is reported, in connection with the construction of Australia's capital city, Canberra. Extensive sewage farms are being formed three miles outside the city boundary. A site has been selected for the construction of a dam to lock the water from the Queanbeyan River, in order to force a continuous stream into the Molonglo, which flows through the Federal capital territory. The cost of the dam will be about £100,000. On the Cotter River, twenty miles from Queanbeyan, a dam is being constructed to store water for the supply of the capital. Although the rainfall has been light, it was estimated there was a flow recently sufficient to supply Melbourne. From this dam the water is run in pipes through a tunnel cut in the hill to a big reservoir at Red Hill.

The electric power plant, which will generate sufficient power for lighting and industrial purposes in the city, and is to cost £60,000, is approaching completion. Hundreds of thousands of bricks are being produced at the State-owned brickworks on the site. Rotary kilns to increase the yield are being installed. The Jervis Bay railway will tap localities from which supplies of lime for cement may be obtained.

Extensive nurseries contain large plots of healthy trees, which are to beautify the streets and avenues of this model city, and the work of actually laying out the capital may be expected to proceed without much delay. The Australian Government has acquired an area of 900 square miles, which is now known as the Federal Capital Territory. This land is to be held by the Government and only leased to occupants.

BETWEEN sixty and seventy joiners employed on the erection of Government huts at Stobs Camp struck work last week for a rise of wages of 1*d.* per hour, from 10*d.* to 11*d.*, the rate of pay to other joiners in the district being 9*d.* per hour. A delegate visited Stobs Camp next morning on behalf of the strikers, and was informed that the men were not now needed, and shortly after about 100 Royal Engineers, with their equipment, arrived at Stobs Camp from Edinburgh.

VARIETIES.

THE Nottingham City Council determined on Monday last to apply to the Local Government Board for leave to borrow £40,000 for a re-housing scheme.

MR. W. THOMPSON, A.M.I.C.E., deputy borough surveyor and engineer of Burton-on-Trent, has been appointed borough surveyor of Mansfield.

THE Rother Vale Collieries, Ltd., propose to erect 199 houses at Thurcroft, the plans for which were approved at last Monday's meeting of the Rotherham Rural Council.

THE bricklayers of Dover, whose application to the builders for an increase of 1*d.* an hour in wages was ignored, have decided to extend the notice to six months rather than resort to a strike in time of war.

THE Hull City Council have appointed their acting engineer, Mr. Bricknell, to be city engineer in succession to Mr. A. E. White, retired. The commencing salary is £750 a year.

THE directors of the London and Lancashire Fire Insurance Co., Ltd., propose to pay, on the 1st proximo, a further dividend of 15*s.* per share, less income tax, making with the interim dividend of 14*s.* per share, less income tax, paid last November, a total of 29*s.* per share, less income tax for the year 1914.

MR. WILLIAM NEWTON DUNN, F.R.I.B.A., aged sixty-six, of Wray Park, Reigate, and of 1 and 2 Bucklersbury, E.C., who died on December 23, left estate valued at £108,223 (net personalty £61,576). He gave £500 to his clerk, Harry Bowen. Mr. Dunn was senior member of the firm of Messrs. W. N. Dunn & Son, architects.

MR. T. P. FRANK, M.I.C.E., has been appointed borough surveyor for Stockton, in succession to the late Mr. M. H. Sykes. The salary is £500 per annum, rising to £700. Mr. Frank, who is at present at Newark, has sixteen years' experience, and is thirty-four years of age. He started at Huddersfield, went to Dewsbury, and then to Ripon, and to Newark. There were 126 applications at Stockton.

MR. HAROLD OAKLEY'S remarkably clever sectional view of the Bank of England appears in *The World's Work* (by the courtesy of the *Illustrated London News*) as an illustration to an article entitled "The Silver Bullets." It reveals the lay-out of this world-famous building in a most vivid fashion, and is conspicuous for its characteristically careful presentment of architectural detail. From a professional point of view one misses a ground plan.

THE Scarborough Town Council have this week approved a scheme of town improvement which is estimated to cost about £80,000, the work, however, being spread over a number of years. The plans and report are to be forwarded to the Local Government Board for approval. The areas affected are in the Central and East Wards, the oldest and most congested districts in the old town, and the scheme embraces the construction of a new thoroughfare about a mile long.

THE Housing Committee of the Newcastle City Council has issued a report on its Walker estate scheme. The committee propose to utilise an area of 28½ acres situated to the west of Walker Park abutting upon Scrogg Road and Wharrier Street. On this site, which is deemed desirable both as regards situation and gradients, it is proposed to erect 688 dwellings of five types—four on the flat principle, two storeys high and semi-detached, at rents between 5*s.* and 8*s.* 3*d.* per week, and the fifth of self-contained houses to be let at 9*s.* a week. The estimated capital cost is shown to be £117,781 16*s.* 8*d.*, and the estimate of expenditure and revenue shows an annual surplus of £408 3*s.* 10*d.*

THE Society of Architects held a successful Concert in the King's Hall, Holborn Restaurant, on Wednesday last as an alternative to the annual dinner, which has been abandoned on account of the war. Major E. C. P. Monson (T.D.), President, explained to the company that any financial balance left after defraying expenses would be given to the Relief Committee particularly engineered by architects. For the same object a collection was made in the room, and the sum of £10 2*s.* 6*d.* obtained. An appeal was also made by Major Monson for recruits both to the Army or Navy and to the Voluntary forces—in the latter of which he has just been given a high command. The musical programme included such excellent artists as Miss Annie Bartle, Miss Nellie Walker, Miss Winifred Mansfield, Mr. Charles Pond, Mr. Will Edwards, Mr. George Blackmore, and Mr. George Bolton. At the piano was Mr. T. Noakes.

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FORTHCOMING EVENTS.

Saturday, April 24.

Edinburgh Architectural Association : Visit to Edinburgh Castle, David's Tower, &c.

Institution of Municipal Engineers : Southern and South-Eastern Districts' visit to L.C.C. New County Hall, at 2.30 P.M.

Monday, April 26.

Surveyors' Institution : Adjourned Discussion on Papers on "The Report of the Land Inquiry Committee on Housing," to be reopened by Mr. W. E. Riley, F.R.I.B.A., at 8 P.M.

Tuesday, April 27.

Institution of Civil Engineers : Annual General Meeting of Corporate Members, 8 P.M.

Royal Institution : Paper entitled "The War on Belgian Architecture," by Mr. Banister F. Fletcher, F.R.I.B.A., at 3 P.M.

National Housing and Town Planning Council : Conference in Edinburgh (two days).

Thursday, April 29.

Junior Art Workers' Guild and the Architectural Association : Combined Meeting at 8 P.M.

TREATMENT AND DISPOSAL OF SEWAGE.

THE issue of the Final Report of the Commissioners appointed to inquire and report what methods of treating and disposing of sewage (including any liquid from any factory or manufacturing process) may properly be adopted, marks the termination of a painstaking and thorough inquiry which has extended over a period of sixteen years, during which time nine separate reports have been issued, of which four deal mainly with the purification of domestic sewage discharging into streams, two with the discharge of sewage into tidal waters, and three with the discharge of manufacturing effluents. The Final Report is a general summary of the conclusions and recommendations contained in the nine reports already submitted.

It is with the four reports dealing with the purification of domestic sewage that we are mainly concerned, but there should be noted in premiss the recommendation of the Commission for the constitution of a supreme body—either a separate Commission, or a new department of the Local Government Board—which shall be a Supreme Rivers Authority, dealing with matters relating to rivers and their purification. This body is in the several reports referred to as a Central Board or Central Authority, and would act as a tribunal of appeal in disputes between local governing bodies, such as Rivers Boards, County Councils, and Sanitary Authorities, and possible pollutors of rivers and streams.

The general question of the disposal of domestic sewage resolves itself under two headings—that of towns and densely populated areas, and that of sparsely populated districts. For the former the Commission advocate a public system of sewage and sewage disposal, and they have come to the conclusion that it is practicable to purify the sewage of towns to any degree required, either by land treatment or by artificial filters, and there is no essential difference between the two processes. Before, however, attempting to purify the sewage by land or filters, the Commission find that it is generally desirable to remove from the sewage, by a preliminary process, a considerable proportion of the grit and suspended matters.

Of preliminary processes there is a choice between sedimentation tanks, either quiescent or with continuous flow, septic tanks, and chemical precipitation. In the comparison of these it is stated that domestic sewage which has been passed through a septic tank is not more easily oxidised in its passage through filters than domestic sewage which has been subjected to chemical precipitation or simple sedimentation; and also that the liquor issuing from septic tanks is bacteriologically almost as impure as the sewage entering the tanks, so that the exaggerated claims that are sometimes put forward for the action of septic tanks is not warranted by the conclusions of the Commission.

Whether sedimentation, septic, or precipitation tanks are adopted, the Commission, while giving figures for average or normal rates of working, are careful to point out that no generally universal rules can be laid down, as the rate in any particular instance will be influenced by the character of the sewage as well as by the nature of the subsequent treatment in contact-beds or filters; but in the absence of special circumstances favouring a particular plan, it would appear that there is very little difference in annual cost between the various methods of tank treatment when taken in conjunction with the cost of subsequent filtration through percolating filters, assuming that the kind of filter adopted in each case is that which is best adapted to the particular tank treatment required. It is, however, fairly clear that the Commission favour chemical precipitation to the other forms of preliminary process, and in regard to septic tanks advise a combination of chemical precipitation with the septic tank pure and simple, for they report that by passing septic tank-liquor through tanks of a size sufficient to hold about one-quarter of the day's flow, with the addition of from two to three grains of lime per gallon to the liquor, the suspended solids in the liquor are materially reduced, a considerably large quantity of the liquor can be treated per cube yard of filter, and the offensive character of the liquor is largely destroyed.

It should be noted that, with regard to nuisance from smells in sewage treatment, the Commission affirms that all sewage works are liable, at times, to give off unpleasant smells; they should, therefore, be situated away from dwelling-houses, whenever this is practicable. Architects should regard this statement as an axiom whenever they have to deal with the sewage of a country house. They should also remember that it is the avoidance or diminution of smell that is the only valid argument for a covered septic tank; for the report of the Commission states that, as regards digestion of sludge and quality of tank liquor, a closed tank possesses no advantages over an open tank, but that there is less sign of nuisance if the tank and the feed channels to the filters are covered in.

As regards the secondary treatment of sewage, the choice between land treatment and artificial filters is summed up as dependent primarily on local conditions. If a sufficient quantity of good land, to which the sewage can gravitate, can be purchased for about £100 an acre, land treatment would usually be the cheapest method to adopt; but in cases where only clay land is available, it

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would generally be cheaper and more satisfactory to provide artificial filters.

The choice between contact beds and percolating filters is one between co-existent advantages and defects in each case; but, on the whole, the Commission seem to have formed a preference for percolating filters. Simple contact will, generally, only yield a good effluent where the sewage to be treated is weak, and double, or even triple, contact is necessary in other conditions; moreover, in nearly every case a greater rate of filtration—generally double—per cube yard can be adopted if the material is arranged in the form of a percolating filter than if it is used in contact beds. Percolating filters are better adapted to variations of flow than contact beds. On the other hand, with percolating filters there is apt to be a nuisance from flies, especially with filters constructed of coarse filtering material. In the warmer months of the year, such filters swarm with members of the *Psychodidae*, which, though appearing to breed and develop in the filters, may usually be seen in large numbers on the walls of houses, or buildings close to or on the works.

In rural areas the preferable method of disposal of sewage is dependent, in the opinion of the Commission, on the abundance or the scarcity of the water supply. With an abundant water supply, piped to the houses, water carriage is, in their opinion, the most satisfactory system, even though it may necessitate the use of cesspools. But, of course, a system of sewerage is preferable. Where a water-carriage system is impossible because of the inadequate water supply, the Commission, after reviewing various conservancy methods of excrement disposal, believe that under proper supervision a system of dry closets may be open to little objection on sanitary grounds, provided the closet is so constructed that its contents can be conveniently and frequently removed, as by the use of pails. In small communities, they say, the removal may generally be left to the householder; but in larger villages it may, with advantage, be undertaken by the local authority.

The Commission lay stress—quite rightly—upon the importance, in villages where no sewers are available, of the provision for cottages of ample garden space for the disposal of domestic refuse; and they advise the distribution of domestic waste water over the garden, although, even here, they admit the permissibility of cesspools, as far as possible from the dwelling, if no water supplies are prejudiced by the leakage from them. Speaking generally, we should be of the opinion that cesspools are preferable to the continuous flow of domestic waste water over a garden by permanent lines of distribution, for the amount of flow will in any house be fairly uniform, regardless of the weather; while the garden would be benefited by a regulated supply from the cesspool, according to its temporary needs. Where, therefore, a dwelling is dependent on its own demesne for the disposal of sewage and waste water, a cesspool, in addition to the dry-earth closet and its concomitants, appears to us to be a practical necessity for the successful operation of the garden. The concomitants of the earth closet should include not only a store for dry earth, but a storage-place for that from the pails; so that this, too, like the waste water, may be applied as the requirements of the garden dictate.

NOTES AND COMMENTS.

In connection with our reproduction of sketches from King's Lynn by Mr. Walter Gandy (January 8 and April 9) we may note that interesting discoveries have just been made during the demolition of the Shambles in the Saturday Market Place, which had been erected in 1779-80, adjoining St. Margaret's Church. An account of these discoveries appears in the *Lynn Advertiser*. To provide space for the eighteenth-century Shambles, there was pulled down a chapel dedicated to St. John, with an undercroft used as "a consecrated vault, in which were carefully and decently deposited the bones of the dead disturbed in forming new graves in the then extensive cemeteries of St. Margaret's Church."

The late Mr. E. M. Beloe, in his work "Our Churches," in writing of St. Margaret's, refers to the chapel as follows:—

"Although no important addition appears to have been made in the fourteenth century to the church, there was built on its northern side, and westward of its front, the charnel chapel as it was called. This was a very beautiful building, very similar in design and in position, with reference to the church, to that existing in Norwich, now the Grammar School, this being also the Grammar School. The two buildings are nearly contemporary. The Norwich chapel was founded by Bishop Salmon, who died in 1325, and who might have continued the strong interest of our bishops in the churches of Lynn, and founded this also.

"If this were so, it is the last work connected with our churches which was either founded or forwarded by the bishops. Henceforward, in the fifteenth century, we shall see the buildings were undertaken by the people themselves, and their wealth and energy finished the great works the bishops of Norwich had accomplished.

"The only record we have of the building of the charnel chapel is in the rolls of the Trinity Guild, now with the Corporation muniments. The entry is on February 14, 1325, thus: 'Eodem die confratres ordinaverunt quod scabini liberent custodibus carnerii ad fabriciam ejusdem £4.' In English thus: 'On the same day the brethren ordain that the scabins (treasurers) pay to the custodians of the charnel for the fabric of the same £4.' The entry is in the same year that Bishop Salmon died."

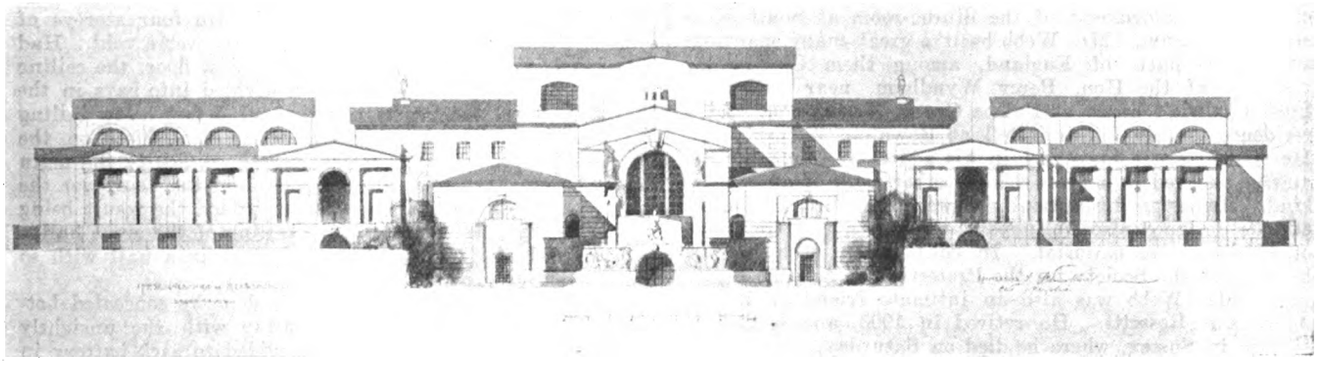
Considerable doubt existed, fostered by an incorrect drawing by the late Rev. E. Edwards and engraved in Taylor's "Antiquities of Lynn," as to the exact position of the chapel, but during the recent demolition of the Shambles the remains of the chapel have been discovered some six feet below the surface of the Saturday Market Place, and they at once establish the fact that Mr. Beloe's theory was the correct one, and that the building stood at the westward corner of the church. The base of a buttress, which undoubtedly stood at the south-east angle of the chapel, has been uncovered and can now be seen *in situ* at the north-west angle of what was the original aisle. When the bricks which formed the south wall of the Shambles were removed the original north aisle wall was exposed, and on the extreme north-west angle of it the line of the buttress of the chapel became clear. This line is directly over the base of the buttress below. There were apparently three off-sets in the buttress, the marks being clearly defined in the wall of the church. The plinth of the buttress is moulded in a similar way to other plinths around the exterior of the church. A portion of the main east wall of the chapel has also been brought to light running from the buttress towards the north. Earlier excavations revealed the base of a wall some distance north of the buttress, but in line with the wall more recently discovered. In the remains of the main east wall is a piece of panel work with moulded hood.

There are some things in our ordinary life with which only the direst necessity of the state of war should be allowed to interfere, and in these may surely be included the education of children; therefore we are glad to learn from the *Morning Post* that, notwithstanding the recent Treasury Minute and the circulars issued by the Local Government Board and the Board of Education, the London County Council is to be allowed to proceed with its building of new schools under what is known as the 40 and 48 scheme. This scheme represented a bargain between the Board of Education and the local education authority in London, whereby, over a period of fifteen years, the classes in the schools were to be steadily reduced in size until no class in an upper school would have more than forty pupils, and no class in an infants' school more than forty-eight. The Education Committee has all

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ENTRANCE FAÇADE



[From *Zodtchy*.

REAR FAÇADE

A MUD-BATH HYDROPATHIC ESTABLISHMENT AT ZHELEZNOVODSK.—M. M. Dubinsky, Architect.

along been anxious to proceed with the scheme, under which a million pounds has already been spent, but the check on municipal borrowing seemed likely to put a stop to it. In order that this capital expenditure should not be curtailed the Committee recently consented to the rigid paring down of the estimates on maintenance account, and the rate was reduced by a penny in the £. Owing, however, to the prohibition of the Treasury, the work of prospecting and putting in hand new schools was stopped. Representations were made to the Board of Education, which in turn made representations to the Chancellor of the Exchequer, who, it is understood, took the matter to a Cabinet meeting, with the result that the work is to go on and the Council is to be allowed to borrow the money.

In the new architectural room which has been fitted up in the basement of the Tempest Anderson Hall in the Museum of the Yorkshire Philosophical Society at York, an immense improvement has been effected, the almost incomparable collection of pottery and other Roman antiquities having been thoroughly cleaned, rearranged, and labelled. This includes a large collection of sarcophagi, cinerary urns, and Samian table ware, together with some Roman moulds which have a peculiar interest at the moment. They were worn by soldiers of the Sixth and Ninth Legions in the same manner as our troops are wearing identification discs. In the department of Mediæval sculpture the Society has, during the last year or two, gradually recovered from various sources fragments of the shrine of St. William of York, which originally stood behind the great stone reredos, also destroyed, of the Minster, and which has been re-erected, as far as possible, in the Museum. They have also recovered three of the eight niches of the great reredos itself, together with the canopies and some portions of the decoration, though none of the statues occupying the niches have been found. The old reredos stood one bay further west than the present glazed screen. It must have been a very tall and imposing piece of sculpture, in Tees marble, some of the eleven fragments recovered in the last three years being in splendid preservation.

At a recent meeting of the Glasgow Archæological Society a paper was read on "Pictish and other Minuscule Inscriptions in Scotland, with New Readings," by Mr. Ludovic M'L. Mann, F.S.A.Scot. Mr. Mann gave new readings of several Scottish inscriptions, all probably prior to the tenth century. Some were written in minuscules in old Gaelic and in Latin, but the most of them were in Ogam characters in Pictish. The method of finding a key to the reading of the Pictish was explained, and it was demonstrated how by its application nearly all the Ogam inscriptions could be interpreted. The old Gaelic formula written in minuscules, "Oroit. Ar. Anmin," meaning "Pray for the soul of," was shown to have a parallel in the inscription at Fordoun, Kincardine, written in the same characters, but the Goidelic "Oroit" was replaced by the Pictish equivalent "Pid," which therefore was a form of the Pictish verb "to pray" or "to intercede." The prefix to formula in Pictish, "Pid," frequently suffered from the elision of the first letter, as it was demonstrated how on nearly all the Ogam-inscribed Pictish monuments the formula had a

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style like Idarnoin, followed, as at Iona and in Ireland, by the name of the person interred or commemorated. In Pictavia, however, the formula was not always prefatory. Using this key, the famous pillar-stone at Newton, Aberdeenshire, had at last yielded up its secret, enshrined in two sets of letters, each of different alphabets—namely, the Ogam and the debased Latin. It declares that it was erected, among other reasons, to ask the pious wayfarer to stop and pray for the soul of one Vorr, and that a kinsman or friend of Vorr, called by some name like Berrisef or Iosif, had put up the monument. Arguments on similar lines were put forward regarding the Ogam-inscribed slabs found at Bressay, Brodie, near Forres, Scoonie, Broch of Burrian, North Ronaldshay, and at Lunnasting, the writing in which last case seems to mean—"The stone, or cross, of Tochets; pray for his (her) soul; this stone put up by Nechton." At Brandsbutt, Inverurie, the Ogams discovered a few years ago seem to show a bilingual gloss representing the Goidelic, supplementing the Pictish.

THE LATE MR. PHILIP WEBB.

BORN at Oxford in 1831, Mr. Webb was for some years assistant in the office of Mr. G. E. Street, where he met and formed a lasting friendship with William Morris. Together these two carried out much decorative work, including the adornment of the dining-room at South Kensington Museum. Mr. Webb built a great many mansions in various parts of England, among them Clouds, the residence of the Hon. Percy Wyndham, near Salisbury, Lord Carlisle's house at Palace Green, Kensington, and a residence for Sir Lothian Bell at Rownton, in Yorkshire. He showed great ingenuity in his additions to old houses, and he engaged in a great deal of other work of an artistic kind. He designed beautiful glassware for William Morris, and he designed also wallpapers, tapestries, and tiles, and other decorative material. In conjunction with Morris, he founded the Society for the Protection of Ancient Buildings. Mr. Webb was also an intimate friend of Burne-Jones and Rossetti. He retired in 1900, and settled at Worth, in Sussex, where he died on Saturday.

ARCHITECTS AND SCHOOL VENTILATION.

IN the House of Commons on Tuesday (April 20) Mr. King asked the President of the Board of Education whether he was aware that the architect to the Board took part in experiments, made at Birkenhead, on November 20, 1913, into the ventilation of schools; whether any report was made to the Board on these ventilation tests; and, if so, whether the report had been, or would be, made public.

Dr. Addison: The answer to the first part of the question is in the affirmative. The Board's architect did not in this case submit any formal report, but even if he had it is not my practice to publish the advice given by my officers on matters affecting the administration of the Board or other departments.

Mr. King: Is the hon. gentleman aware that there is a great deal of uncertainty in the policy of the Board with regard to ventilation inquiries, and consequent difficulty arising in formulating plans by the local education authorities?

Dr. Addison: The schools are provided by the local authorities.

COMPETITION NEWS.

MIDDLESBROUGH.—In a competition limited to local architects for the William Fallows School proposed to be erected at Grove Hill, the plans of Mr. James Forbes have been placed first. The assessor was Mr. John W. Simpson, F.R.I.B.A.

WHITEHAVEN.—The Council of the Society of Architects have received a letter from the Town Clerk of Whitehaven, dated March 30, to the effect that the Housing Committee have decided to appoint a duly qualified architect to act with the borough surveyor in adjudicating upon the designs sent in for the Housing Scheme Competition, and that they have also decided to extend the time to which designs will be received to May 10 next. Further, the Housing Committee intend to appoint the successful designer as the architect unless there is some objection to this course. Under these circumstances the Council of the Society have withdrawn their intimation to members relating to the negotiations between the Society and the promoters.

ILLUSTRATIONS.

GRESHAM COLLEGE, E.C.

THIS college was built from the designs of Mr. Dendy Watney, F.S.I., and Mr. Sydney Perks, F.R.I.B.A., F.S.A., City Surveyor. The design for the building was exhibited in the Royal Academy Exhibition, 1912. It has a frontage to Gresham Street of 71 feet, and a return frontage to Basinghall Street of 58 feet. The elevations are of Portland stone.

On the ground floor is the great hall 65 feet long by 40 feet wide, with a gallery at the east end, and provides accommodation for about 500 people. There is also a retiring-room for the professors, and a main entrance hall in Basinghall Street, with an electric lift for access to the gallery and all upper floors. The hall is entirely lined with oak. From the floor to the top of cornice is 24 feet 6 inches. The carved work was executed by Mr. Gilbert Seale. Provision is made for a complete cinematograph apparatus which is required for scientific and particularly medical lectures.

Three large panels at the west end of the hall have been temporarily hung with canvas. It is proposed that they should be filled with mural decoration dealing with Sir Thomas Gresham and the history of the college; when these are filled in the blur of colour will add additional effect.

This hall is only about 2 feet 6 inches narrower than the nave of St. Paul's Cathedral measured between the bases of the columns, and above it are four storeys of offices with their partition walls, &c., all over a void. Had the usual girders been fixed under the first floor, the ceiling of the great hall would have been divided into bays in the usual manner, the beams being about 3 feet below ceiling level. This might have had a detrimental effect on the acoustic properties, and to get over the difficulty the main girders were fixed one storey higher, and the floor over the great hall is suspended from these girders, the result being that there is a flat surface to the ceiling of the great hall—an unusual and perhaps unique feature in a hall with so large a building over it.

The heating of the great hall is done by concealed hot-water batteries, thereby doing away with the unsightly radiators. Cleaning doors are provided to each battery in the basement; the whole can therefore be kept perfectly free from dirt with the least possible trouble.

A great amount of thought was given to the ventilation of this hall. The fresh air passes from the exterior over the heating batteries through bronze grids in the panelling and into the hall, the foul air is sucked away through concealed openings above the oak cornice into trunks which are built in the segmental ceiling connected to flues and expelled at top of building by powerful electric fans: the whole scheme has proved a complete success.

The cost of the building was £34,000. The foundation-stone was laid on Wednesday, July 24, 1912, and the opening ceremony took place on Tuesday, December 16, 1913.

The contractors for the foundations were Messrs. Cubitt & Co., and the contractors for the superstructure were Messrs. Holloway Bros.

ETCHINGS OF CLOTH FAIR AND ST. BARTHOLOMEW, SMITHFIELD.

THESE etchings by Mr. H. G. Webb are interesting as memorials of vanishing London, as well as from their graphic value.

OAK SETTEE FROM BISHOP LLOYD'S PALACE, WATERGATE STREET, CHESTER.

THIS piece of furniture is a charming example of linen-fold panelling, for the carving is skilfully wrought and is not crude and barbarous in any way, as with some of the examples of early Jacobean furniture.

The settee is constructed with two shaped posts at the back, having three linen-fold panels between separated by moulded styles: the panels have a mitred mould on three sides, and a chamfer cut on the bottom rail to make the appearance of a mould.

The arms slope from the shaped posts on to supports turned above the seat, which is hinged, and the lower portion of the settee thus forms a coffer, having three smaller linen-fold panels in the front, similar to the others.

Although rather worm-eaten and battered in places, the settee is still of handsome appearance.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary general meeting of the Royal Institute was held on Monday, the 19th inst., at Conduit Street, W. Mr. Ernest Newton, A.R.A., President, was in the chair.

Mr. E. Guy Dawber (hon. secretary) said he regretted to announce the decease of the following members:—

Samuel Flint Clarkson, elected Associate in 1869, Fellow 1885, and placed on the list of Retired Fellows in 1910. Until a few years ago Mr. Clarkson took a prominent part in the activities of the Institute, serving for several years on the Board of Examiners, and also on the Practice Standing Committee. He had also filled the offices of Hon. Secretary and President of the Architectural Association. He was district surveyor for North Chelsea for over seventeen years, and afterwards held the same position for the Royal Borough of Kensington.

He also very deeply regretted to announce the death of a young Associate member of the Council, Mr. Samuel Douglas Topley, who was elected an Associate in 1910. There was something inexpressibly sad in the death of a young man standing on the threshold of an honourable career. Although only thirty-one years of age, Mr. Topley had already made a name for himself by the prominent part he had taken in the discussion of questions which have agitated the profession in recent years. He was particularly interested in the subject of Registration. In debate he was a keen opponent with the courage of his opinions, and never hesitated to express what he thought was the right thing. The Council found him a most capable and willing worker, and during the short time Mr. Topley had been on he won their highest regard.

The Hon. Secretary moved: "That the regrets of the Institute for the loss it has sustained by the decease of its esteemed members Samuel Flint Clarkson and Samuel Douglas Topley be entered on the minutes of this meeting, and that a vote of condolence be passed to their relatives."

The decease of the following members was also announced: "Wm. Henry Duffield, elected Associate 1882, Fellow 1898; Ernest Day, of Worcester, elected Fellow 1889; and William Basil Stefanoni, Licentiate.

Mr. Segar Owen then read a paper entitled—

The Design and Construction of Buildings for Industrial Purposes.

To the factory architect, he said, are offered many great and absorbing problems, and only in the case of prohibition through cost are we ever supposed to be confronted with the impossible. Somehow or other we are called upon to meet various conditions and develop them upon the lines required for the undertakings we are engaged upon, and if we accomplish this, as a rule the ultimate forms are left to us to deal with without restraint.

The middle of the nineteenth century probably saw the greatest activity in factory undertakings. These buildings throughout the United Kingdom are familiar to us all. All much of the same type of design, somewhat dull and uninteresting, but always of a solid, heavy type, as reflecting the character and solidity of the businesses carried on therein, they stand to this day, still performing useful work. As a rule they are constructed of local material, but in none of them did it appear as though any very great thought had been expended upon the convenience of the employees.

What a change there is between these factories and those which have been erected during the last twenty to thirty years. Throughout England there are to be seen undertakings erected in this period which show that the capitalists have tried to place their people in buildings and surroundings that must influence, and for the better, the lives and ideals of their workpeople. No longer are the factories dark, insanitary, draughty, and barn-like structures; but bright, open, thoroughly ventilated and warmed, and with administrative conveniences adding materially to the comfort and well-being of the employees. In addition to this, social clubs and institute buildings form almost a necessary part of the present-day factory.

The most marked change between the early factories of the nineteenth century and the present time is not, however, only due to the better housing of the employees, but to an entirely different mode of construction, and material employed in the buildings themselves. Perhaps the greatest changes in construction have been brought about by the introduction of steel and concrete, used together for walls, roofs, and floors, and combined in such a way that almost any peculiar form of building necessary to a certain process can readily be carried out.

The various buildings comprising the usual factory undertakings may be roughly stated as follows: Office and administrative department; raw goods stores; general factory buildings; warehouses for finished goods; power-plant buildings, including boiler-house, &c.; attendant and by-product buildings.

Our aim in the planning of such a factory must be the arrangement of these various buildings, and the departments comprised in each, in such order as to ensure the passage of the raw materials, entering from one, two, or more sources of supply, through the successive shops until the goods reach their final stage, and are stored in the warehouse, for distribution to the customer. This passage of the articles under manufacture must, if possible, be arranged without re-entering or re-crossing departments through which in course of manufacture they have previously passed. Such a process in many cases means a simple arrangement for passing the goods from one side of the building to another, or from the top of a many-storeyed building to the bottom, but in factories where the goods are partly manufactured or handled in the various shops and completed or assembled in others, the scheming to bring each department successively within touch of the other requires care and thought in planning; and for this purpose it is essential for the architect to make himself generally acquainted with the process of manufacture in each case.

After considering the plans of some of the departments given in the above list, Mr. Owen proceeded to review generally the forms of construction applicable to the factory.

The following forms are offered for choice:—Brick structure wholly, with wood or cement floors, and with wooden or steel roofs; steel and brick composite buildings, with wooden or slung concrete floors, steel or wooden roofs; steel structure; reinforced-concrete structure.

Some twenty to thirty years ago the forms of composite buildings varied very considerably, and were designed in both iron and steel in peculiar forms for each undertaking. Gradually out of this somewhat chaotic state the designs became more uniform; joists, girders, and roof principals were catalogued, and almost all forms of major items in the buildings were carried out in a generally recognised design. Girder connections, seatings, and brackets have been further standardised, and perhaps we are now too well supplied by manufacturers and constructional engineers with catalogues of these details, which, whilst forming a constant and convenient reference, are inclined to check research and enterprise in the way of new forms. Be that as it may, the result has been to reduce cost and expedite the work. It is safe to say that the composite building is the one most universally in use, and offers a very varied field for all classes of factories, both of heavy and light construction, and is capable of dealing satisfactorily with the greatest of all former troubles, namely, large spans and heavy loads.

There is, however, another and a newer form of construction that is claiming and demanding very serious consideration, and that is reinforced concrete. The earlier promoters, for reasons best known to themselves, desired to treat the architect as neither knowing nor wishing to know anything of this science of building. That it is a wonderful science is undoubted, and its ready acceptance on the Continent and abroad has enabled many regions of the world to be brought almost into the heart of commercial life. Bridge construction, riverside piers, jetties, retaining walls, silo buildings, cooling towers, culverts, and the more peculiar forms, seem the lines upon which reinforced concrete finds its particular outlet. One hesitates to accept this form of construction for the average factory, on account of the many changes that are constantly being made, especially as regards machinery. These changes invariably lead to the cutting of floors, rearrangement of loads and points of support, and one cannot get away from the feeling that during these changes the cutting of a main member might possibly mean a partial collapse.

It is, of course, not every factory where the loads on the outer wall necessitate anything more than the ordinary brickwork, and in the matter of appearance there is a great deal to be said for those factories where the outer walls are still carrying their share of the load, and represent a reasonable proportion of solid brickwork to window

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opening. The appearance of a steel structure very often represents nothing but one continuous sheet of glass divided by the widths of the stancheons themselves.

Sometimes the steel structure stops short at the first or second storey, but the lecturer said he preferred to carry up the outer stancheon to the roof as an additional means of stiffening the whole structure against wind pressure. Such buildings are carried to spans of varying widths up to 150 feet, and to heights from 50 to 80 feet, the larger dimensions being very familiar as required by large steel or iron works, bridge building, engineering, ordnance and foundry undertakings.

The construction and finish of factory floors is a matter requiring care and experience. To-day architects have constantly brought to their notice different forms of floor construction—fire-resisting blocks, patent joists, &c., but most prefer to use the ordinary steel joist and concrete-filled floor, and in special cases, girders with concrete filling, boxed out and strengthened with mesh metal. It is unnecessary to state that the weights of the loads to be carried must be carefully calculated, so that there will be no straining of the structure, and the surfaces of the floors must be properly prepared to take the finishing necessary for the special class of factory we are dealing with at the moment. These finishings may be roughly taken as follows:—Engine and power stations, hard tile; boiler houses, blue brick; chemical factories, blue acid-proof brick, with acid-proof asphalt; factories, granolithic paving, asphalt and wood blocks.

Concrete floating, granolithic paving, and tiling, all have their various uses in one or other part of the factory, but whatever be the material used, it should be of the best quality—if timber, well seasoned—and laid in a workmanlike manner, as hardly any part of the factory is subject to the same wear as the floor, and therefore causing a greater inconvenience if it should break up and require renewing.

The roof of a factory is, perhaps, the most interesting detail to be considered. When called upon to erect a factory in an unfamiliar district the lecturer's practice was to apply to the nearest observatory for the records of winds and gales, also for particulars of rainfall. One has then the satisfaction of calculating all details on a sound local basis. No risk should be run when calculating the strains and stresses for this or any other part of the structure. One must admit that at times roofs and girders give the impression of being extremely weighty, and therefore costly, and perhaps it may be only two or three times in the year that they are strained up to their full load.

The roof of the average two or more storeyed building is usually a single span of the ordinary type of principal suitable to the width, with probably a certain proportion of skylight area, and in some cases peculiar details as regards louvre ventilation. The lighting of large one-storey areas presents more details of interest. The north and east light is the steadiest for factory buildings; and the usual type of roof is that known as the Weaver roof, in which the northerly side is wholly glazed, and the southerly side slated or covered in some other form.

The angle of the north pitch is a matter requiring careful adjustment and is governed by the situation of the works, either at home or abroad. In England, and in dull climates, and on the western slope of a valley, the angle with the horizontal must be reduced to about 60°. The slated side will be at a pitch of about one-third the span. This angle of 60° may require to be varied in factories where an unusual amount of ventilation is required. The span of these Weaver type roofs varies from 25 feet to 35 feet. The maximum limit of span this type of roof may be taken is 33 feet, so as to be economical as regards construction, and satisfactory as regards lighting the shop. In a case where the span was of 50 feet for the purpose of housing special machines, although the roof principal members were painted white, and the whole of the north side glazed, the shop was not well lighted, and the saving in cost negligible.

The craving amongst manufacturers for large floor spaces with as few supports as possible brings us to the problem of what cross spacing can one economically carry these roofs. Again, 30 feet to 33 feet seems the economical limit; beyond that special and costly girdering is necessary.

For factories of 120 feet to 150 feet span, and requiring a considerable amount of light, the following form of roof is being largely adopted on the Continent. The principals spanning the full width are formed as light Warren girders, of a depth between 14 feet to 20 feet. On both wall sides the whole depth of the girder is glazed, and from the head of the glazing from one side to the other, concrete flats are formed, but not over the centre one-third of the shop. These flats are laid with a slight fall outwards. The space left in the centre of the roof is then framed as an ordinary pitch roof, glazed on both sides. Such a roof gives an enormous amount of light into the area covered, and if it is used in a shop where ventilation is very necessary, the centre portion of the roof is lifted from the level of the flat on to framed louvres.

Having considered the roof principals themselves, the question arises as to the most suitable forms of roof covering. Special houses, such as boiler-houses, acid chambers, or chemical buildings, would require special treatment, but for factory roofs generally it is desirable that they should be boarded, the covering after being either slate or patent roofing, acording to position, suitability, and cost. The most successful roof framing and covering for such as the English climate is one framed with purlins some 3 feet 9 inches to 4 feet 6 inches centres, covered with dressed boards 1 inch to 1¼ inch thick, tongued and grooved, and laid directly from purlin to purlin, covered with felt, and with vertical and horizontal battens, and afterwards slated. Patent roof coverings have still to be proved, but they undoubtedly appear satisfactory, and are easily laid and quite simple to handle in gutters and around louvres. Concrete filled roofs, either on the flat or on the rake, are usually asphalt-covered, and are quite readily handled and rendered weather-proof.

Many excellent forms of patent roof glazing are turned out by English manufacturers. Most of the patentees have carefully considered, and can now with equal facility glaze their bars into timber, steel, or concrete connections, and provide an excellent form of weatherproof glazing even with a pitch as low as one in thirty. Rapidity of execution, easy renewals of broken sheets, renewals of special parts are not the only advantages. By special arrangement of the bars, one can be certain that condensation will not drop from the roof on to the floor beneath; this is a matter of very considerable importance where the manufacture of certain articles is carried on in shops where a certain amount of free live steam or vapour is given off. Where possible, the sheets of glass should not be of greater length than 9 feet, though if required they will be provided up to 11 feet. The glazing of a very considerable amount of Continental factory work is carried out with plain T section bars, the glass being puttied into the rebate. Such a system would certainly not be watertight for any length of time with such a climate as we experience in England.

No one nowadays undertakes the erection of a factory where valuable machines are installed, and the product of the factory is of considerable value, without installing a system of fire protection sprinklers. Time and again one sees the result of the sprinklers after an outbreak—as a rule showing that the fire has been got under almost within a few minutes of the outbreak, and little but local damage has occurred.

No important works building should have overhanging rafters at the eaves. Parapet walls are a protection which enables the roofs to be more readily repaired, and with that protection the roof is probably more often overhauled by those under whose care and attention this work falls.

The principles which govern the factory staircase are those which apply to all public buildings, namely, suitability and directness of access. Their position in the works will be governed by a number of considerations, both as regards traffic and purpose, but no circumstances must be allowed to cramp or confine them into out-of-the-way corners. Of a width convenient for the numbers using them—and if this means a greater width along the step than from 7 feet to 8 feet the flight must be divided by suitable plain round handrails with strong iron standards, also with plain handrails fixed on the wall side. No flight should be of a greater number than twelve steps, and these not greater than 6 inches rise, or less than 11 inches on tread. All landings must be full half, and the outlet or doorways at the top or bottom must open into as large a collecting area as possible.

Mr. Segar Owen concluded as follows:—"One personal note I should like to add. My training to this profession has been in direct association with two, both members of this Institute, Sir William Lever and my father, the late Mr. William Owen. To Sir William Lever, I owe the opportunities of working out many problems in factory work at home and abroad, and also in connection with a

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large factory village. I have had, therefore, the advantage of working for one who, I do not hesitate to say, before any others desired to surround his workpeople, both inside and outside the factory, in buildings, houses, and under social conditions which had never been seen before he started Port Sunlight. The factories as bright and clean as any home, the cottages bright within and without, and rivalling in conditions the open-air life of any village in the heart of the country. Big problems of finance and commerce were never so overwhelming that Sir William Lever did not give time and thought, and lay out vast capital sums solely and wholly for the benefit of his workpeople. Under such conditions, you will well understand that mere solid problems of weight and stress have a very different interest. . . . Of my father I can say but little. For a provincial practice, such as is rarely understood in London, he could, I think, have claimed some success. He was a student to the end of his days, and when I first joined him, I was struck with the enormous amount of interest and happiness which he obtained from that side of his practice so closely allied with factory work, but I believe he was one to whom the simplest form of building, however plain, was in itself a great joy. Other work found him a greater joy; but I can never forget his keen desire to achieve, and the joy that would come over him in the completion of the simplest forms of building, if, in his mind, the object of its purpose had been obtained."

Discussion.

Sir William Lever, in proposing a vote of thanks, said that Mr. Segar Owen had spoken about not having any new theories to advance in his paper. In that fact lay, he believed, the strength of Mr. Owen's position. Factory buildings can only be developed by experience gained with each departure in factory work. His firm commenced employing Mr. Owen's father in 1886; the experience was so satisfactory that they have never had any other architect for the factory buildings than Mr. Owen and his son—though they have had many architects in connection with the model village at Port Sunlight. An architect can only teach himself how to meet the requirements of such a concern by long study. Owners would like to see some cheapening of factory building. Engines are enormously cheaper in their productive capacity each time they are installed; but in building the price per cubic foot is steadily going up. Factories are being erected to-day much more solidly than is required. This is not economical building. Engines and factories require renewing almost as often as one's overcoat. Moderation was required in connection with everything. Our factory buildings are far too strong and permanent for any claim made upon them. He could not speak too highly of such innovations as rest-rooms. He was certain anyone building a factory who provided baths and rest-rooms will find themselves amply repaid by the health and vitality and interest of the employees. He himself had seen the type of factory girl improved by the adoption of these arrangements to the level of the shop-girl type. And there was a distinct difference between the two. There seemed no reason why the factory girl should not be raised to the higher level. Only one type of plan appealed to him for factories, and he called it the concertina plan; merely its outside walls needed to be permanent, and the inside divisions should all be of a character that they can easily be taken down. On this point he was continually fighting with his managers, who would not realise that nothing was so changeable as a works. The question of the price per cubic foot ought to be reduced to a more scientific level; he had known it to vary from 3*d*. to 8*d*. Probably they might regard 3*d*. as the irreducible minimum. In his experiences the changes above that figure can be avoided if the architect has studied the problem. There was no greater burden on a business than an expensive factory building. To anyone who wished to study the detail of the subject he commended Mr. Owen's paper. He was heartily in agreement with it. In the matter of designing factory staircases, architects were past praying for; some staircases are like step-ladders. Each business requires its own type of building, and it would be well if architects would specialise in various types of business as they specialise in various types of architecture. Owners were sometimes in a great hurry to get their works done instead of waiting to consider all the points. London was far and away the greatest manufacturing centre in the United Kingdom. Nevertheless, through the by-laws in operation in London, it was becoming increasingly impossible to carry on a manufacturer's business. Recently in building a warehouse they found they were much handicapped by the necessity to provide interior walls instead of having an uninterrupted floor space. In fact, he believed that by-laws had been carried to such a length that new factories could not profitably be erected in London.

Mr. Matt Garbutt remarked that Mr. Segar Owen had been more fortunate than most architects in being allowed to take generous views of accommodation. One was a little sorry to hear Sir William Lever approve so strongly of specialisation. Surely the man who takes the wider view is likely to do the better work. Architects suffered from specialisation. In some of the schools in France architects and engineers are at first educated together. Some time ago Mr. Cram, speaking in that room, had commented on the fact that in America they were going back to a more general education in the early stages of an architect's training. Reverting to the theme of the paper, it always struck him as a great pity the English canals are worked in their present manner. They have been allowed to fall into the hands of the railway companies, whose interest it was to burk them. Possibly, now motor transport is becoming so prominent, these companies may endeavour to work the canals again. With regard to the construction of factories, the question seemed to him to be not so much what materials are used as to how they are used. For example, we are beginning to get accustomed to the idea of using great baulks of timber for fire-resistance purposes; cast iron seems to be coming into its own again. London was undoubtedly a big industrial centre, yet industries are leaving it. Its by-laws were a sore point with architects, and their restrictions drive tenants away to places like Edmonton.

Mr. William Dunn remarked that though Mr. Owen had referred to the change in factory buildings during the last thirty years, the beginning of such change might be placed to a much earlier date. Many years ago the conditions of labour were so appalling that the Royal Commission which reported on the matter awakened the public sympathy, thereby creating the greatest factor in the subsequent change. But however severe legislation might be in London, it had not yet called for the bathrooms, rest-rooms, refectories, and so on advocated by Sir William Lever. The by-laws of London imposed a serious handicap, and one which got worse and worse. We have become a great country not by being directed and told what we must do, but by the exercise of initiative. A factory building to an architect is a disappointment, for after he has got the plan from the works manager, which seems delightfully simple, he has then to consider the wants of the different machine makers and so on. But the architect quickly finds his problem is not without interest. It was fortunate that some merchant princes allow factories to be made bright and interesting.

Mr. Max Clarke asked where the architect's duty ceases and the engineer's begins, also how much responsibility the architect should assume, and at what point call in the assistance of a special technical kind. Who should pay for such information? In the administrative county of London the regulations with regard to factories are so severe that the fewer built the better for the owners. He always felt that a factory was one of those buildings which are subject to alteration practically at a moment's notice. If this is the case the owner of a factory constructed in reinforced concrete is laying himself open to unlimited trouble. He would like to know whether the L.C.C. requirements are looked upon as satisfactory or as too stringent. His own opinion was that a restriction to 250,000 cubic feet capacity as the maximum for a building of the warehouse class was very arbitrary. He had heard that flat roofs for factories are much more satisfactory and require much less attention than any other kind. In factory buildings his experience was that the paving used in the streets is infinitely better than any granolithic laid *in situ*, for once the latter breaks up it is almost impossible to repair it: whereas, if laid in slabs, it can be repaired in twenty-five minutes. It seemed almost impossible to get any floor which will resist grease for any length of time. The cost of a factory naturally depended upon its nature. A one-storey building could be erected for 3*d*. per cubic foot or less. But when one comes to a factory such as has to be put up in London—a great many storeys in height and encumbered by restrictions—the cost might go up to 8*d*. per foot. One can only wish there were a few more clients like Sir William Lever.

Mr. Ernest Newton, the President, in closing the discussion, pointed out it was a mistake to suppose a severely

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practical building was uninteresting to architects, for so long as the problem is tackled in the spirit suggested by Mr. Segar Owen, its solution admits of great skill and ability. Should a building perfect for its purpose be the result, one got good and even impressive architecture. If Sir William Lever had not devoted his life to business he would have made his name as an architect. Those present knew his keen interest in architecture, and what he has done for it. Sir William had once told him he would like to have been an architect; but though the suggestion was at once made that they should change places, the offer was not accepted. But the proposal was still open.

The vote of thanks was then carried by acclamation.

Mr. Segar Owen said when he arrived at a point where he felt special expert advice was necessary he told his client, and always found him willing to pay for it when he had a good case. Granite was found the best form of floor where grease is found, though in small areas hard vitreous tile will resist it. The causes of high prices for building were the cost of labour and the by-laws.

The next meeting will be the annual general meeting, and will be held on Monday, May 3, when the annual report of the Council will be presented.

LOO ABBEY.

By JOHN A. RANDOLPH.

THIS Abbey was situated about midway between Nieuport-Ville and Furnes, and on the Vicinal from Furnes to Ypres.

It was of humble and modest origin, being at first a chapel served by a priest—Thomas Van Belle by name—and he established there, about 1050, a number of Canons-Regular, but the Bishop of Thérouanne, in 1075, ordered the monks of St. Bertin's Abbey to undertake the services there.

Its first publicly known deed was dated 1093, and was a charter from Philip, Count of Loo, son of Robert le Frison, who gave them rights over the county of law, tolls, &c., they to pay merely a simple rent to the Count for the lands they already held from a third party, who held them from the Lord of the District.

Blessed Jean de Warneton, Bishop of Thérouanne, gave the monks canonical rights in 1100, and established them in the Augustinian rule, prescribing the election of their provost by the canons of the district, preferably by themselves.

Pope Pascal II., six years later, confirmed the institution in all its rights and privileges, and in those it might acquire later, and the Bishop renewed and added to the constitution in 1119, which Pope Callixtus II. approved by Bull threatening with anathema anyone attempting to rob them of their privileges.

Provost Gérard persuaded William, Count of Loo and Viscount of Ypres, to give three manses free of tolls; he added some more, four years later, contiguous to the east side of the cloister. The grants were ratified in 1123, at the request of Blessed Charles the Good, and Thierry d'Alsace confirmed them.

William, from Canterbury, in 1148 gave them some local tolls, &c., and Thierry, in the following year, gave 106 measures of land near the town.

William died in the Abbey in 1162.

At Corbie Abbey, near Amiens, the Abbot sold, in 1164, part of the tenths he received from Loo Abbey in exchange for eight silver marcs of Flanders. This was confirmed by Popes Urban VIII. (1184) and Clement III.

Soon after Philip of Alsace granted certain land and a path alongside the cloister, along which the inhabitants of Gravelines used to go on their way to Bruges, and in 1177 gave twenty sous for altar wine and breads, likewise confirming the privileges his father had granted.

Clement III. settled a dispute in 1189 between the Abbeys of Loo and Clairmarais as to tenths levied by Loo on arable land in their parish given by William of Loo to Clairmarais, and the Abbot of St. Nicolas at Furnes arbitrated in a quarrel between Loo and the priests and clerics of Thérouanne, Tournai, and Arras that arose through the restitution of a sum of money and other causes. The Provost and Dean of St. Walburge's at Furnes also assisted in the settlement of the case.

Pope Honorius III. permitted Mass to be said at Loo, but without chant, without bells being rung to call people to the service, and with doors closed to excommunicated people.

After negotiations which lasted nine years, the monks came to terms with the parishioners of Nieucapelle with regard to the right to appoint a sacristan there, the parishioners contesting the monks' claim to such a right. The Dean of St. Peter's at Lille intervened and gave sentence in 1222, but it was only in 1231 that an agreement was come to.

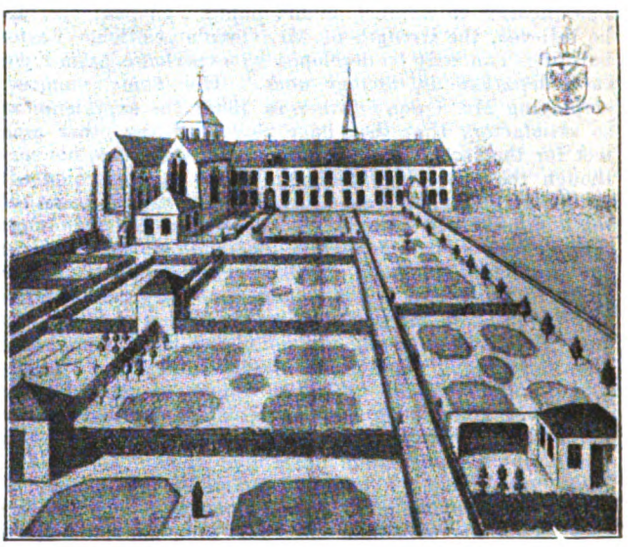
About 1222, in Loo Abbey Church itself, the Blavotins and Isangoins fought and massacred a priest and a sub-deacon, and seriously damaged the building.

Thereupon the Abbot appealed to all the Abbots, Provosts, Priors, Deans, Priests, and faithful for alms wherewith to restore the monastery.

In 1227 the newly erected hospital in the town was put by the Bishop under the Abbot's direction.

One of the smallest fees ever demanded for a privilege was that of three deniers per annum for fishing rights between two dykes which Philip, Viscount of Loo, and his wife granted to the Abbey in 1239.

A rather curious subject—and the conditions with regard to its fulfilment—was the cause of a dispute between the monks and the sheriffs of Loo. A screen was to be put up in the church in the chapel of St. Vincent. The monks were ordered to provide the materials; the screen was not to hide the view of the altar, nor block approach to it; the monks were not to have to pay for the materials as long as they kept to the chancel in their church and left the rest to the parishioners, except on the north side, if the monks still wished to use it; and the parishioners had to make various repairs to the chapel, the tower, the bells,



REAR VIEW OF THE ABBEY OF LOO AT THE END OF EIGHTEENTH CENTURY.—From an Old Picture.

&c. Large immunities, including freedom of toll on all groceries brought into Dixmude, were among the grants to the Abbey.

A new enclosure wall was built in 1269, and as it enclosed part of lands belonging to Gui de Dampierre, Count of Flanders, he gave them the whole of it.

In 1290 the tower fell, and the responsibility for re-erecting it was, after a dispute between the Abbey and the town authorities, forced on the inhabitants by the Count; but it took twenty-one years to come to an agreement, when the churchwardens and parishioners agreed to share with the Abbey the expenses of reconciliation of the church if it were profaned, thus shirking the Count's order.

Philip the Bold, in 1386, gave the monks fresh sanction whereby the Ypres barristers, sheriffs and council ordered their subordinates not to molest them, according to the privileges granted by Philip of Alsace.

The magistrates of Loo and the Abbey, in 1406, owing to the men of the law having forbidden the townsfolk to buy wine from the monks, there being an inn there, within the Abbey's jurisdiction, were again in discord. Margaret de Maele, in 1404, having granted the rights to the magistrates. The Council naturally won their case, as it did in 1386, when the Council of Flanders decided it.

For twenty years or so the monks had had a relic of St. Vincent in a gilt bronze shrine. The churchwardens, in 1416, sued them for the offerings received when the relic was exposed for veneration in the Saint's chapel on his feast, but the monks fought the case successfully, the

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THE ABBEY CHURCH OF EVERSAM.—From an Old Picture

plaintiffs, in 1419, when the decision was arrived at, being ordered to pay the costs of the suit.

In 1421, 1424, and 1429 further disputes arose about the sale of wine at the Abbey tavern; in the last instance the order was given to stop the practice, with leave to appeal at Furnes. The following year Philip the Good, Duke of Burgundy, took the Abbey under his special protection, appointing his Furnes bailiff to watch over their safety.

Pope Eugenius IV., in 1431, conferred on the Abbot of St. Nicolas at Furnes, for three years, the power of excommunicating the pillagers and invaders of Loo Abbey, which had suffered much from their depredations.

Two years later a murderer from Polinchove took refuge on the Abbey lands. Demanded to give him up to justice, the Abbot refused. The Provost's bailiff was thereupon arrested, and the whole of the temporalities were seized. The community, frightened, begged clemency of the Duke, under pretext of having acted in ignorance. The Council of Flanders inflicted a humiliating penalty, and, in addition, to pay the murderer's fine and the costs of the trial of the summons to deliver up the criminal.

A fresh dispute arose in 1441 about priests deputed to say two Masses a week in the church nave, the Ordinary of the diocese eventually settling the difficulties.

Another quarrel arose in 1460, as to the respective jurisdiction of the Council and the Abbot, the ecclesiastic being given the verdict by Philip the Good.

Under Maximilian, the Austrian troops, in 1485, occupied the west half of the town, and the Abbey had many soldiers billeted on it. The Abbot appealed to the Sieur de Nassau, and the soldiers were withdrawn. Thanks to the Abbot, the town's magistrate was also dispensed from billeting the troops, and he undertook to bear part of the cost the monastery had incurred; but when the danger was passed the authorities disagreed, so the Abbot caused the Council of Flanders to summon them and compel them to keep their promise. That was in the following year.

In 1489 the magistrate of Loo refused to administer the oath to the bailiff appointed by the prevost. Agreement was not reached till 1497.

The new dormitory was built in 1490 by Provost Stephen Doom. Two years later saw the invasion of German troops who, not having received their pay for many months, held the country to ransom, seized Loo and neighbouring Eversam Abbeys, made prisoners of the provosts of these houses, and took them back to the garrison, compelling them to pay the arrears due to the troops, to the amount of 8,000 gold florins, of which the Provost of Loo paid 5.000 and the Eversam one 3,000. In return for this the German commanders promised to obtain, in consideration of the payment, letters of assignment from the King and the Archduke on the security of the Bruges and Frank domains and the towns and chatelaines of Ypres and Furnes.

In 1515 the Abbey lent 300 livres to Charles Quint, who, in 1530, fixed the boundaries of the Provost's authority in the northern part of the town, and four years later 1,400 livres were lent to the Sovereign towards the expenses of the war against the Turks.

In 1530 Provost de Waghermakere purchased a house at Ypres to serve as refuge during troublous times, and a few years later grounds enclosed with walls were added.

The Gueux, in 1566, plundered and sacked the Abbey, as did the hordes of Simon Uitenhove twelve years later.

To pay their debts the monks had, in consequence, to dispose of several of their properties, Philippe II. authorising that step in 1587, and later on in the year a house and grounds alongside their Ypres refuge.

Provost Maillard built a chapel at the refuge, which was temporarily ceded to Ypres seminary by Provost Zaman, who was made mitred Abbot in 1621 by Gregory XV., and granted faculties for bestowing the solemn blessing in all churches and abbeys in his jurisdiction, except in the presence of a Bishop or Apostolic Legate, and to confer minor orders and the first tonsure to monks under his authority; also to consecrate altars, vestments, and priestly ornaments, excepting the Holy Oils, and to reconcile churches and monasteries under his rule. This Bull was ratified by Philip IV. in 1622.

The Abbey thenceforth acquired the qualification of "Savante," and most of the monks obtained the Bachelorship of Theology, many of them becoming heads of other houses.

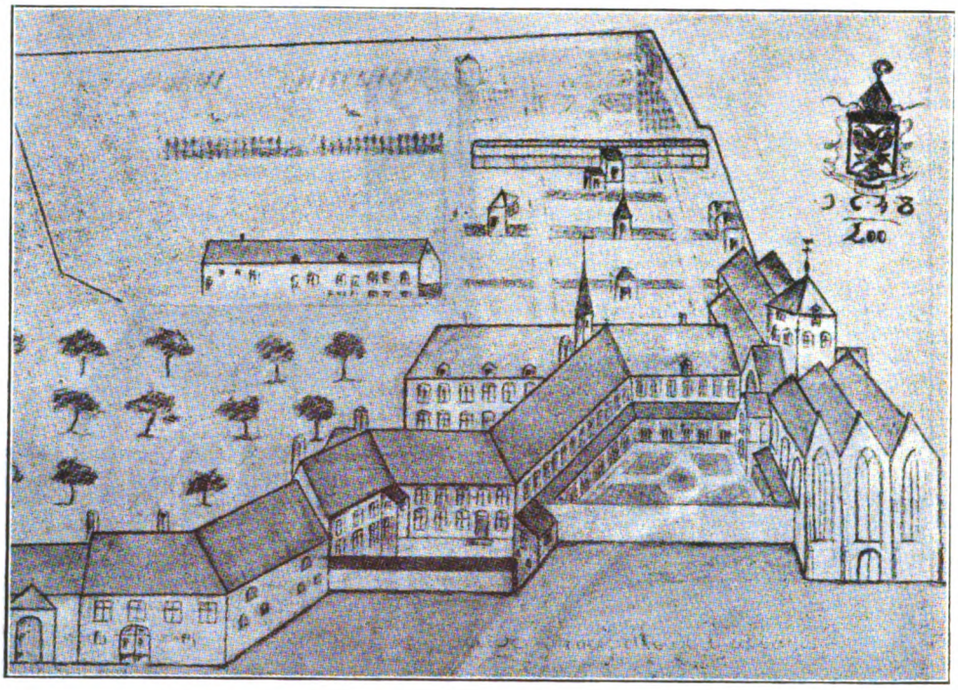
Owing to the grants from Counts Philip and William of Loo in 1093 and 1162, the Abbots succeeded in being recognised also as Counts of Loo.

Philip IV., in 1630, obtained a loan from the Abbey of 5,000 florins. Soon after, however, continual wars and pillages left the monks in straits, and they had to borrow a like sum, at 16 deniers per cent., on the security of the silver of the house; six years after they secured a respite from repayment for seven years, on their paying one silver mark for the grant.

In the meanwhile several new buildings had been added to the monastery—*e.g.* the walls of the Abbey and church, which had been burned. Zaman also repaired the library, and restored a number of buildings and dependencies; while Abbot Reynaerdt built the high altar and provided the crozier, which was still to be seen in the seminary at Bruges up to the present war, as also four large candlesticks.

To David, however, belongs the rehabilitation of the

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GENERAL VIEW OF THE ABBEY OF LOO IN 1648.—From an Old Picture.

Abbey and its funds; he also embellished the church and provided a marble floor, three big bells, and several smaller ones. His successor built the rood loft, with an organ. De Meuninck rebuilt the church and the infirmary, the library, and the strangers' quarters, which were ruinous, and prepared the rebuilding of the abbot's house and of the monks' dormitory, which were in bad condition, reorganised the accounts, and drew up a register of lands and properties they owned. Under his rule the octagonal red-brick pigeon-cot, still extant, and bearing the date 1700, was added.

Prosperous and splendid, and at its best by 1782, it lasted thus till the end of 1793, when the French Republicans pillaged it and its church, which they bared completely, and took with them the two candelabras of copper, of fine workmanship, and nine feet high, which stood on either side of the high altar. All other ornaments at the other altars were taken or smashed. The wrought-iron railing separating the Abbey church from the parishioners' part was sent to Bergues, near Dunkirk. The same day the iron doors of the enclosure were broken down.

Many of the monks sought refuge at private houses in the town, as also at Ypres and elsewhere.

On April 17, 1797, Citizen Coppée, with an escort of cavalry, came to expel the abbot and monks that were left, at six in the evening. The Abbot, Braeme, whose portrait is in a private house at Houthem, near Furnes, handed to the Commissary of the Republic a protest against the expulsion, and addressed the monks in Latin. The inhabitants of the town, and even the trespassing soldiers, were deeply moved at the outrage.

All the Abbey property was sold for a mere song, and gradually the buildings were demolished, with the exception of the church and a few minor parts; the infirmary, with the library, is now the presbytery, the farm is a brewery, the grange, or barn, is the farm, the lofty octagonal pigeon-cot being part of the farm.

The church, mainly early Gothic, is now parochial, with a striking but modern tower and spire, of very successful design, in the pictures looking not unlike Boesinghe or Elverdinghe, and, if one did not know it for a modern erection, it would easily pass as an original structure of the mediæval period.

THE annual general meeting of corporate members of the Institution of Civil Engineers will be held on Tuesday, April 27, at 8 P.M., to receive the report of the Council, and to elect the Council and auditors for the ensuing year. On its conclusion, a special general meeting of corporate members will consider and, if approved, adopt a proposal for the amendment of the by-laws.

THE ROOF OF WESTMINSTER HALL.

THE repair of the roof in Westminster Hall was again the subject of severe criticism in the House of Commons on Thursday (April 15).

Speaking on the vote for the Houses of Parliament, Mr. King said he thought there were a great number of points in connection with the way the work was undertaken and decided upon that were open to the strongest suspicion and censure. Westminster Hall roof had existed in its present state for about 500 years. It was undoubtedly the most magnificent piece of Gothic carpentry in the world, and it covered a spot which was perhaps more sacred to members of the British Empire than any other spot to be found on the earth's surface.

"We are aware," continued the speaker, "that for more than a year Westminster Hall has been full of scaffolding, and some of us have mounted the scaffolding and have seen that wonderful roof, and also the deplorable state into which parts of it have fallen. But this House is probably not aware that it was only in June last that the work was decided upon, that the full report of Mr. Baines, the very able architect and surveyor who, under the Office of Works, had reported upon this great structure, was laid before the House. It is perfectly obvious that the House and the public had no opportunity of considering this large expenditure of £60,000 or of considering the artistic and architectural questions involved in this great undertaking."

Mr. King went on to explain that on no previous occasion had a work of this nature been undertaken without inquiry by a Select Committee. Now, however, it was altogether different. "Ministers, secure in their majority, have thought that they could carry on this work without coming to the House of Commons for its advice," he continued.

"It is not only that we have had no opportunity of public inquiry, but there is also the fact that the Office of Works have studiously avoided any view or suggestion but what would support an already foregone conclusion.

"Apparently they made up their mind that this being an age of iron and steel, they would have an iron or steel roof over Westminster Hall. Why was no architect who has been engaged on the roofs of our cathedrals—why has no architect who has repaired York or Winchester or Durham or Canterbury, of which the roofs have had large structural repairs recently—been called in? Then again, there is the fact that there exists a very powerful society in London for the protection of ancient buildings. That society asked at an early stage that they might be allowed to visit the roof and form their own opinion on the investigations that were going on. They were flatly refused.

"I should like to know why no outside authority was consulted, and why no competent judges were allowed to mount

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the scaffolding. There is also this point. The assistant to the late Mr. Pearson, the R.A. and architect, to whom we owe the beautiful external walls of Westminster, was engaged day after day for something like a year upon Westminster Hall and its roof when the repairs and additions were undertaken by the late Mr. Pearson. That architect was never even approached. He probably knows the whole work of Westminster Hall better than anybody else. Why was he never approached while the criticisms that he put forward in the public Press have simply been ignored?"

Mr. King went on to say that he felt that the Office of Works, having decided to give an opportunity for a very able engineer to put an iron roof above the present good roof, simply allowed him to put forward the case for the iron roof and had not allowed the others who believed that the magnificent roof which had lasted for 500 years ought, if possible, to be so repaired that it might last another 500 years, opportunity to make their views known. He gave the Office of Works full credit for the investigation which they undertook into the ravages of the beetle and the moth which had so damaged the timbers in late years. That investigation was very thorough, and the report of Mr. Baines was no doubt extremely able and complete as to the present condition of the roof.

He admitted that something had to be done. The ravages of the beetle Xestobium tessellatum and of the goat-moth necessitated that. But why was it that those timbers, which had lasted 500 years, and which probably had from the beginning those insects which were now devouring them, had suddenly become so susceptible to their ravages? Personally he attributed it to two reasons. One was the removal of the dust from the roof, this being one of the best protections, and the other was the late sittings of the House in recent years, which, owing to the fact that the House was heated with hot air in the winter, caused aquaeous vapour and condensation on the roof, which considerably facilitated the work of the insects.

"I admit," continued Mr. King, "that something had to be done to Westminster Hall. One method of doing it was to give to a clever official like Mr. Baines the opportunity to carry through some scheme of his own, a scheme which I have no doubt will preserve the appearance of the Hall, but will certainly cost a great deal more than employing honest old wood. The other alternative was that they might have supported the roof with the large amount of scaffolding that was already in the Hall, using that to shore up the beams. That would have given an opportunity for the matter to be thoroughly discussed. There are many points ignored by the Office of Works. There is, for instance, the important point of what should be the external covering of the roof. Westminster Hall was originally covered, like all other great buildings, with lead and there is much to be said for the return to this covering again."

He doubted whether it had ever occurred to the Department, or whether they had ever considered the beauty of the ancient building from the point of view of restoring it and keeping it as nearly as possible in its old condition. He submitted that there was a very grave case of vandalism against the Office of Works. They had refused an opportunity of a public inquiry and to his mind they had made a great mistake in deciding to alter the character of the roof.

"From below," he continued, "it may look the same, but it will no longer be an existing piece of Gothic art. It was until recently a magnificent piece of oak carpentry, which had remained good for 500 years. In a week or two it will no longer be that, it will be a great fraud. It may look as fine, it may light up well, but the real antiquarian character of the roof will be gone for ever."

A strong defence of the Office of Works was put forward by Mr. Soames, who was of opinion that the Department had acted on perfectly sound lines.

"What is going to be done," he said, "is to put a very slight steel bracing behind the old timbers, so that every cubic inch, almost, of the present timbers as they exist, and have existed for many years, will be preserved to us and to our children practically in appearance as they are to-day. It is true that when the scheme prepared by the Office of Works, and described in the very admirable report of Mr. Baines, appeared, one letter from an architect appeared in *The Times*. The writer of the letter found fault with the scheme, and suggested the rebuilding of the whole roof. I am bound to say that I read that letter with amazement. I was astounded that any man with any architectural pretensions should propose to destroy and reconstruct this roof, when it is possible to keep the old roof in existence by simply bracing it together with steel and so keeping it, apparently as we have known it for many years past, for the benefit of our children and grandchildren.

"Not very long after this letter appeared in *The Times* there appeared a letter in support of the action from two of the most eminent architects, of the present day—Mr. Reginald Blomfield and Sir Aston Webb, who perhaps have been occupied with more public buildings in this country than any other men. When—"

[Mr. King (interrupting): "Neither of them ever built anything in Gothic architecture."]

Mr. Soames (continuing): "I beg the hon. member's pardon. My knowledge is gained from personal experience. I was in the same office with Mr. Reginald Blomfield—that of his uncle, Sir Arthur Blomfield—and the whole of the work he dealt with was Gothic. Thus two of the most eminent architects that could be selected at the present time have both approved of the scheme. The suggestion was thrown out that the Office of Works had a preference for an iron and steel roof, and having that preference set to work to devise a scheme to carry it out. After reading the report of Mr. Baines it appeared to me that the matter had been gone into with exceeding carefulness. The hon. member says that if the existing roof is preserved in its entirety, simply braced together with a slight steel structure, that the whole of the antiquarian character will have gone. What he wants to do is to take away a great part of it and put up a new building; then, apparently, in his view the antiquarian character will have been saved. That, I am bound to say, is a reasoning I cannot understand. I should have thought that if he had the anxiety to preserve the antiquarian character of the old building he would most certainly, instead of asking for the destruction of a great part of it, approve the scheme of the Office of Works, which would preserve the whole of what we have now for many, many years to come."

The official reply for the Department was made by Mr. Beck, who said Mr. King was mistaken in supposing that there was anything either hurried or surreptitious about the affair. Ample opportunity had been given for consideration, and before Mr. Baines' plan was adopted it was submitted to the Ancient Monuments Board. This body, which contained men far removed from official influence, carefully considered Mr. Baines' report. They then asked that from a technical point of view it should be submitted to Sir Aston Webb and Mr. Blomfield. These two architects agreed that Mr. Baines' suggestion was a most valuable one and one that would preserve this great monument in a most admirable manner.

"It is, indeed, a very strange idea," he continued, "to suggest that instead of preserving these old timbers, the actual timbers which our ancestors put into the roof, which they felled and so magnificently designed, and put in their place for us and those who come after us, that we should put in their place other timbers like them and destroy the old beams that are there. My hon. friend is very much mistaken when he talks about the timber being a magnificent work of carpentry until Mr. Baines' scheme was adopted. That is not so, if by carpentry he means solely wood. As a matter of fact, when Barry restored the roof he used very much the same methods to a certain extent as are used now—that is to say, he used iron and steel in order to strengthen the roof, in just the same way as it is proposed to do now. As regards the lead roof, that is a mere matter of expense. At any rate, even if the criticisms are right—and I do not say they are wrong—it is now too late, because Parliament has voted the money, the orders have been given, and the whole thing is well on its way. It would be stultifying ourselves to go back from a decision we only arrived at last year."

ARCHITECTS' BENEVOLENT SOCIETY.

The annual general meeting of this Society was held on Tuesday, April 20, at 9 Conduit Street, W., at 5 P.M. Mr. Ernest Newton, A.R.A., President, occupied the chair.

Among those present were Messrs. Henry L. Florence, Reginald St. A. Roumieu, H. Chatfeild Clarke, Henry Lovegrove, Sydney F. Bartleet, G. Scamell, E. Guy Dawber, Osborn C. Hills, Percy B. Tubbs (representative of the Society of Architects), W. Hilton Nash (Hon. Treasurer), Percivall Currey (Hon. Secretary), and R. Dircks (Assistant Secretary).

The following report of the Council was submitted:—

The Council of the Architects' Benevolent Society, in submitting their sixty-fifth annual report, regret that they

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have to record a falling-off in the amount of subscriptions, as compared with last year, of £27 18*s*. As no doubt many subscribers have been affected by the war, it is feared that this diminution may be increased during the coming year, unless those who are in a position to do so assist the Society by either augmenting their subscriptions or assisting the Council to obtain new subscribers.

The sum of £1,150 15*s*. has been distributed in grants and pensions—an increase of £141 as compared with the previous year.

The capital account, on the other hand, has been increased. The Society in this connection is greatly indebted to the generosity of Mr. Henry L. Florence, Vice-President, who last June presented a donation to the funded property of the Society of £1,000 City of London Corporation 3½ per cent. bonds, 1914, fully paid scrip. For many years Mr. Florence has manifested his interest in the Society, both by active work as a member of the Council and by contributions; and the Council feel that the beneficial work of the Society could receive no greater testimony to its practical usefulness than this handsome contribution from one with so intimate a knowledge of its character and scope.

The capital was further increased by a donation of £550 made by Mr. George Neat, acting under the discretion given to him by the will of the late Mr. Frederick Ingle, of 24 Queen Anne's Gate, S.W., and Chesterworth, Lincolnshire. A further instalment of £500 was received from the executors of the late Mr. William Glover, making the total amount received to date from this source £1,200. The Society is also indebted to the Chelsea Arts Club for a donation of £50, and to the following donors: Mr. Balfour Abercrombie, £10 10*s*.; Mr. C. Stanley Peach, £10 10*s*.; Mr. Reginald St. A. Roumieu, £10 10*s*.; Mr. Benjamin Inglelow, £10 10*s*.; Mr. W. H. Scrymgour, £10; Mr. Frank Lishman, £6 13*s*. 6d.; and to various donors of smaller sums.

In the autumn the Council were informed by the exceutors of the late Mrs. Arthur Cates that she had left the Society a legacy of £1,000. As this amount was not, however, received before the end of the year, it is not included in the year's accounts.

Shortly after the declaration of war a committee, representative of the architectural profession as a whole, the Architects' War Committee, was formed, and issued a special appeal for contributions for the relief of members of the profession or their dependants who are in distress caused by the war. In November this committee handed over to the Society the sum of £591 19*s*. 6*d*., with the request that the sum should be administered in the relief of such cases, but that assistance need not necessarily be given only in the form of charitable doles. The Council have opened a separate account at the bank for this and any subsequent amounts that may be received from the Architects' War Committee, and are distributing grants among applicants, as well as contributing, subject to certain conditions, to the funds of the Professional Employmnet Committee and the London Society, both of which bodies are endeavouring to provide work for members of the profession who are in temporary difficulties in consequence of the war. At the termination of the administration of this fund a detailed account will be issued.

The following, being the five senior members, retire by rotation from the Council: Mr. E. Arden Minty, Mr. Wm. Woodward, Mr. Arthur Ashbridge, Mr. Sydney F. Bartleet, and Mr. E. Guy Dawber. To fill the vacancies caused by these retirements the Council have the pleasure to nominate Mr. W. Campbell Jones, Mr. Walter L. Spiers, Mr. Percy B. Tubbs, Mr. W. Henry White, and Mr. Edward Greenop.

The Council have again the pleasure to nominate Mr. Henry L. Florence and Mr. Reginald St. A. Roumieu as Vice-Presidents.

In concluding this report the Council earnestly hope that they may be assisted by the active co-operation of members of the architectural profession in obtaining fresh contributions, as there are indications that assistance will become a matter of greater urgency in the crisis through which the country is passing at the present time, and that the resources of the Society will be heavily taxed.

Mr. Ernest Newton, in moving the adoption of the above report, said he would like to call attention to the fact that the goal in front of the Society during so many years has been attained, for their capital has reached £30,000. He suggested they should now aim at £300,000. Large claims would be made on account of the war. An ordinary appeal made to the general body of practitioners would not be likely to be as successful as usual, owing to an increasing lack of employment. The Government's decision to stop building work will increase unemployment among architects. He therefore appealed to the generosity of those more fortunately situated to aid the Society's funds as much as possible. If all would try to emulate the example of Mr. H. L. Florence there would be no difficulty. They might remember that "he gives twice who gives quickly." In view of the Government action, it may perhaps at some future date be necessary to make an appeal outside professional ranks. At present such an appeal would be premature, and if they could do without it they would prefer to do so. Undoubtedly the best kind of appeal is the personal one. Assistance by way of employment has already been given to a large number of architects. The unanimous wish of the members of the Architects' War Committee was that the funds collected by them should be administered by the Architects' Benevolent Society. Such was their confidence in the businesslike capacity of the Society. They knew the funds would be in excellent hands, and the payments made only after careful investigation. That might be looked upon as a compliment to the Society, though those who do the work may be pardoned if they sometimes wish the compliment had not been paid them. Assistance by way of employment seemed to him an excellent system. He was sure he could appeal not only to London men, but to all well-to-do colleagues in the provinces to make a special response to the special appeal. The profession was passing through a critical time.

The report was then adopted unanimously.

The Council for the session 1915-16 was elected as follows:—

President: The President R.I.B.A., Mr. Ernest Newton, A.R.A.

Vice-Presidents: Mr. H. L. Florence. and Mr. Reginald St. Aubyn Roumieu.

Ordinary Members: Messrs. Henry Lovegrove, C. R. Baker King, W. D. Caröe, H. Chatfeild Clarke, Horace Porter, Walter L. Spiers, W. Henry White, Wm. Grellier, Andrew T. Taylor, Basil Champneys, Stanley Peach, W. Campbell Jones, Percy Tubbs, Edward Greenop, and the President of the Society of Architects (Mr. E. C. P. Monson).

Hon. Treasurer: Mr. W. Hilton Nash.

Hon. Secretary: Mr. Percivall Currey.

Assistant Secretary: Mr. R. Dircks.

Hon. Auditors: Messrs. Herbert Shepherd and Osborn C. Hills.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

THE annual meeting of the Sheffield Society of Architects and Surveyors was held on the 15th inst. at the University, under the chairmanship of Mr. A. F. Watson.

The annual report, submitted by the secretary (Mr James R. Wigfull), was a review of matters more or less concerning the technical side of the profession. The total membership of the Society was 109, compared with 114 last year. The War had made a strong appeal to the patriotism of architects and surveyors, and no fewer than forty-one principals or assistants from Sheffield and Rotherham offices were now serving with the Colours. It was a very high percentage. Precautions had been taken to deal with any emergencies that might arise out of the War, either in regard to the interests of the profession or of individuals.

The building trades generally had been very seriously affected. The shortage of labour, especially that of labourers, which was one of the greatest difficulties during the early days of the War, was not now so apparent. This was due in a large measure to the greatly reduced amount of work in progress.

The accounts showed a balance in hand of over £61.

Officers for the ensuing year were elected as follows:—President, Mr. A. F. Watson; vice-president, Mr. C. B. Flockton; treasurer, Mr. R. W. Fowler; hon. secretary, Mr. James R. Wigfull; committee, Messrs. W. G. Buck, F. E. P. Edwards, J. R. Hall, H. I. Potter, H. L. Paterson, C. S. Sandford, C. F. Innocent, J. Lancashire, and F. H. Wrench.

Appreciation was expressed of the manner in which Councillor Arthur Neal had conducted the negotiations with the profession in respect of troubles arising out of the recent revision of by-laws. The expert attention he had given to the subject was, the President said, very much appreciated by the architects concerned.

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BRISTOL SOCIETY OF ARCHITECTS.

THE annual general meeting of the Bristol Society of Architects was held last week at Messrs. Fortt's, Royal Promenade, Clifton. The election of Council and officers for the session 1915-16 resulted in the following members being elected: President, Mr. Graham C. Awdry; Vice-Presidents, Messrs. G. H. Oatley and W. S. Skinner; Council, Messrs. C. F. W. Dening, Mowbray A. Green, G. C. Lawrence, J. Foster Wood, B. Wakefield, and R. C. James; associate members of Council, Messrs. E. G. Rodway and H. W. S. Wills; hon. secretary, Mr. A. B. Botterill.

The annual report stated that in spite of the European crisis an excellent attendance at the meetings and a continued interest on the part of members in the proceedings of the Society had been maintained. The Council also noted with great gratification that at least thirty-four architects, formerly residing within the province of the Bristol Society of Architects, nine of whom are members of the Society, are serving with H.M. Forces, and, in addition, many members, including the President, were devoting a great deal of time in various ways to the interest of the country. The Society numbered thirty-five Fellows, twenty-three Associates, and thirteen Students—a total of seventy-one. At the request of the Sub-Committee of the Architects' War Committee, the Council compiled a list of architects who are willing to undertake Government work in the planning and supervision of buildings and temporary erections and in other kinds of professional service during the war, and also those willing to take over and temporarily carry on the professional work of architects who have enlisted for service with the troops.

During the evening a discussion took place upon various subjects, and Mr. Wilfred L. Haile, the winner of the first prize in the recent students' measured drawings competition, was presented with a book prize to the value of £3 3s., and his drawings, which consisted of a reconstruction of the eighteenth-century reredos at Christ Church (City), a composition design of the Commercial Rooms, Corn Street, and of Park Hill House, were on view.

On the proposition of Mr. G. H. Oatley, seconded by Mr. W. S. Skinner, a hearty vote of thanks was passed to the President, Mr. Graham C. Awdry, for the work he had accomplished for the Society during the past year of office, and a similar vote was accorded to the retiring hon. secretary, Mr. C. F. W. Dening, for his three years' service.

AMENDMENTS TO THE LONDON BUILDING ACTS.

AN ordinary general meeting of the Concrete Institute was held on Thursday, April 8, at Denison House, 296 Vauxhall Bridge Road, Westminster, S.W. Professor Henry Adams, M.Inst.C.E., President, occupied the chair.

The meeting was held to resume the discussion on a paper by Mr. Osborn C. Hills, F.R.I.B.A., District Surveyor for the Strand, entitled "The London Building Acts, with some Suggested Amendments," which had been read at the previous meeting and was reported in *The Architect* for March 26.

Mr. William Woodward, F.R.I.B.A., in opening the proceedings, said they all knew perfectly well that it was possible for a district surveyor to take such a hard and fast line in the administration of the Acts as to make them oppressive. The late Professor Kerr, himself a district surveyor, used to say that district surveyors ought to be reasonable, and he used to help any architect who went to his office with drawings showing anything contrary to the Acts by pointing out the fact at once. The Professor carefully administered the Act with regard to its letter; but he did not lose sight of the spirit. He (Mr. Woodward) remembered the preliminaries to the London Building Act of 1894. There was considerable discussion, because at that time those who were in power in the London County Council wished to do things at the expense of some of the ground landlords, and certain of the clauses were of a particularly confiscatory kind. The Bill was subjected to frequent amendment. The Act as it was finally passed might, and does, sometimes interfere with the value of the ownership of property; nevertheless, on the whole, its various sections protect the public from some of the great drawbacks and nuisances prevalent before the Act. Mr. H. H. Collins, another district surveyor, did an immense amount of good with regard to the Act, and its general smoothness was owing to him. Most architects hoped for a new Act, and they trusted that when it did come it would contain everything necessary in itself, without reference to other Acts, for carrying on building in London. It was a great bother that as soon as an architect thinks he is beginning to grasp the 1894 Act he is referred to other Acts until it becomes no slight labour to understand what the 1894 Act means. Mr. Hills in his paper has alluded to the Building Act of the Emperor Zeno (Zeno reigned A.D. 474-91) as the earliest of which there was really a fairly complete knowledge. But in the Apocrypha there were two references to something of the kind. In the First Book of Esdras, chap. vi. 9-10, there was this: "Building an house unto the Lord, great and new, of hewn and costly stones, and the timbers already laid upon the walls. (10) And those works are done with great speed, and the work goeth on prosperously in their hands, and with all glory and diligence is it made." The Second Book of Maccabees, chap ii. 29-30, says: "For as the master builder of a new house must care for the whole building; but he that undertaketh to set it out, and paint it, must seek out fit things for the adorning thereof; so I think it is with us. (30) To stand upon every point, and go over things at large and to be curious in particulars belongeth to the first author of the story." Some time ago he took the trouble to count the words in the Local Government Board Model By-laws of 1912, and found the total was 21,578: he then went through the whole of the by-laws, and he found he could get the whole of what is in them into 2,198 words. Mr. Hills, in his paper, gave a very valuable epitome of the Building Act of 1894, and it must have entailed a great deal of labour. All those who have not got the time to go through the Act word by word will find that epitome of very great value. Personally he believed the district surveyors might do more in the way of giving a warning before the actual contravention takes place; the building owner is sometimes put to a deal of cost in going on with work which the district surveyor may know will later have to be taken down. The best course for an architect is to go to the district surveyor before the work is commenced, so that the pencil drawings can be gone through and put right. In discussing party walls Mr. Hills pointed out that it has been held that for the purpose of ownership a wall is only a party wall for so much of its height and length as is used to separate adjoining buildings, and that beyond the length or the height so used the wall may be (for the purpose of ownership) an external wall belonging wholly to one owner. And Mr. Hills went on: "For all other purposes, however, the wall for its whole height must still be regarded as a party wall, and must be carried up as a parapet above the highest building adjoining thereto, and must contain no openings, though certain recesses are allowable." On the latter point he had once had a tussle with one district surveyor and defeated him. He (Mr. Woodward) always regarded a party wall to be such to the height only where it separates two buildings, and above that height he considered it as an external wall into which windows could be put. On this point he believed there was a great deal of difference of opinion among district surveyors themselves. On the point of fees he might say that in Hampstead the Borough Council had had communications complaining of the district surveyor's charges. As a member of the Council he had always defended the district surveyor on the ground that the fees are statutory, and also that, though in some cases the district surveyors may get fees which are in excess, in others they only receive what is much less than suitable. The question of whether the district surveyors shall be paid by salary or by fees is for the district surveyors themselves to settle. It was a question, however, which the London County Council intend to raise. In some districts the emoluments are remunerative, in others they are not. In one part of his paper dealing with the Steel Frame Act Mr. Hills says: "Tables are given for calculating the working stress on (*a*) cast-iron pillars and (*b*) mild-steel pillars, and giving the maximum working stresses (other than those due to wind pressure) for various ratios of length to least radius of gyration when the ends are considered as fixed, or one end fixed and one hinged, or both ends hinged." He (Mr. Woodward) had to confess to having no conception of what that meant, and if he was given a million sterling he could not work it out. When district surveyors have mastered that clause they deserve a great deal more remuneration than they get. He might

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mention that he had carried out one or two buildings on the steel-frame principle, and when his clients asked what they had gained he could only tell them they had got a 9-inch wall where one of 14 inches would have been necessary with ordinary construction. He thought he would leave these steel structures to the younger generation of architects. A vital point was that reinforced concrete required the most careful supervision. In the framing of a new Act he was sure district surveyors could render most useful service, and it was to be hoped that practically a total elimination of the lawyer would be effected. If lawyers get on the suggested Building Act it will be found to contain all the old troubles of divergency of opinion as to the meaning of clauses. It ought to be drawn up by the professional societies concerned, with the assistance of the district surveyors. If the draughtsmen of the Workmen's Compensation Act had for their sole object the employment of dozens of lawyers and the creation of litigation for many years they have certainly succeeded.

Mr. Edward Dru Drury, F.R.I.B.A. (District Surveyor of St. Margaret's, &c., Westminster), mentioned a case which had occurred to him some years ago in which he was acting as district surveyor on a job of which the architect was the building surveyor of the district. The work collapsed, and the architect had to pay £700 damages. This the architect tried to get Mr. Drury to refund as arising through his negligence as district surveyor. The question raised by Mr. Woodward about the party wall not necessarily being a party wall for the whole of its height has been decided by the King's Bench Division, when it was decided that window openings in it were permissible as it ceased to be a party wall 15 inches above the highest building. There were many points which a new Act could clear up, as, for instance, the definition of a division wall.

Mr. C. S. Meike, M.I.C.E., said he would like to emphasise what had been said about the need for supervision in reinforced-concrete work. It was useless to make stringent provisions for the design of such work unless equally strong provision is made for supervision when it is being carried out. His own experience had been that more strict supervision was absolutely necessary. Ten years ago he carried out some work in London with a very good firm of contractors under two inspectors. Two years back some of the work had to be taken down, and it was found that for lengths of 4, 5, and 6 feet the tie rods had been omitted. It did not therefore appear as if without better supervision new regulations would not meet the case. It appeared to him that the Local Government Board had done a very great deal to discourage the use of reinforced concrete. If the regulations had been simpler, as they well could have been, it would have been better.

Mr. J. Ernest Franck, A.R.I.B.A., disagreed with Mr. Woodward's hope that when the badly needed revision of the 1894 Act is undertaken the lawyers would be eliminated. It was necessary to go to men trained in that particular class of work if the best result is to be obtained. Architects and engineers should certainly state what they require, but it should be left to lawyers to draft the Bill, bearing in mind the continuity of the Acts which preceded it. Personally he thought the 1894 Act put a premium on bad building.

Mr. Lawton R. Ford, A.R.I.B.A., F.S.I. (District Surveyor for St. James's, Westminster), mentioned a number of anomalies in the present Building Act. He considered that a consolidated Act which would do away with all discrepancies of one Act with another was one of the present needs of London.

Mr. Percy Hunter, A.R.I.B.A. (District Surveyor for South Lambeth), recalled that precisely the same sort of discussion took place twenty-two years ago when the cry was for consolidation. He was afraid that that experience would be repeated. However much the Acts might be consolidated, there would be an advance in construction during succeeding years, and new legislation for dealing with it would be imperative. In ten years' time supplementary regulations will be required.

Mr. E. Fiander Etchells, A.M.I.C.E., pointed out that anomalies cannot be done away with altogether. They could only hope that in new legislation the anomalies would not be so confusing and so distracting as some of those their legal friends had laid for them. The ideal building law would be that most in accordance with the natural law.

The discussion was then adjourned until Thursday, May 6.

BUILDING ESTATE DEVELOPMENT.

AN interesting case was heard at the Barnet County Court on the 13th inst., before His Honour Judge Scully and a jury, as to the right of owners and occupiers of certain residences at Hendon to damages against builders who had filled up hollow land abutting upon the right of way attached to the houses, thereby causing pools of water to accumulate.

Mr. Graham Mould, instructed by Mr. David C. Craigie, appeared for the plaintiffs, the defendant Cracknell was represented by Mr. Saunderson, and the defendant Brummell by Mr. Beaseley, both instructed by Mr. J. H. H. Kidgell.

Mr. Graham Mould, in opening the case, stated that the twelve houses known as Nos. 143-155 Hamilton Road, Hendon, were erected in the year 1910. They comprise a terrace lying between Woodville Gardens and Highfield Avenue and have side frontages to these streets. The defendant Cracknell was the original owner of the land and had granted separate building leases of the twelve houses, together with the right of way at the rear of some 3 feet wide. He was then, and still is, the owner of the land beyond the right of way which land is vacant. The gardens of the houses and the vacant land stood lower than the houses themselves, while beyond the vacant land was a ditch about 100 feet distant from, and 2 feet lower than, the right of way. The land, right of way, and gardens were all lower than the adjacent streets, and in the months of December and January the defendants had carted about 1,000 loads of clay on the vacant land and had formed a bank with a superficial area of 880 yards standing at the steepest part 4 feet above the level of the right of way and with a slope all over it towards the right of way.

The plaintiffs were the owners and occupiers of four houses in the centre of the terrace adjacent to the portions of the right of way which were flooded. Evidence was given by the owners and occupiers of the houses as to the condition of the right of way, and they all stated it had been flooded during the past winter months. The Sanitary Inspector for the district of Hendon proved that the dustmen had been unable to approach the houses from the right of way owing to the flooding of it, and that a sanitary notice had been served on the defendants on March 1 to abate the nuisance.

Mr. Sydney A. Smith, F.S.I., F.A.I., of the firm of Weatherall & Green, produced plans showing the position of the houses and right of way and the relative position of the clay bank and of a previous filling in of other parts of the vacant land, also a ditch and indicating the presence of sewers on four sides of the vacant land. He also handed in a section showing the levels of various parts of the property, &c.

Mr. Beaseley, on behalf of the defendant Brummell, admitted the filling in of the land, but claimed the plaintiffs had no right in law to recover, and even if they had any right their action should be against Cracknell, the owner of the land. He called Mr. Brummell and also Mr. Brummell's foreman, both of whom said the water stood on the land prior to the erection of the bank.

Mr. S. H. Fry, F.S.I., architect, of Hendon, produced a set of plans and levels which he said confirmed the levels given by Mr. Sydney Smith.

Mr. Saunderson, on behalf of the defendant Cracknell, alleged that the land had always been liable to flooding. He called builders and local residents, who said that they had seen water lying on the land prior to last winter.

The defendant R. P. Cracknell stated that before he let the land for tipping there was a pond on it which he had to fill in, and that water had always stood on the right of way. He also stated that he had sold the land in September 1914 to a Mr. Kent, and the completion of the purchase was to take place in two years' time.

Mr. Kent gave evidence corroborating this fact.

Mr. H. E. Rider, F.R.I.B.A., architect, Kingsway, also gave evidence as to levels, &c.

Counsel then addressed the jury for the plaintiffs and the two defendants respectively.

The jury replied to certain questions set to them by the Judge as under:

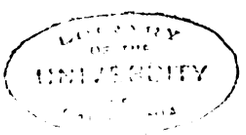
(1) Has the right of way been, in fact, rendered unusable? Answer: Yes.

(2) Is it by the accumulation of water from rain falling upon: (*a*) The clay bank, (*b*) house and gardens, (*c*) the right of way? Verdict: From all three causes.

(3) Are the tenants entitled to any damages, and, if so, what? Verdict: £2 2*s*. for each tenant.

(4) Have the owners of the houses suffered any damage? Answer: No.

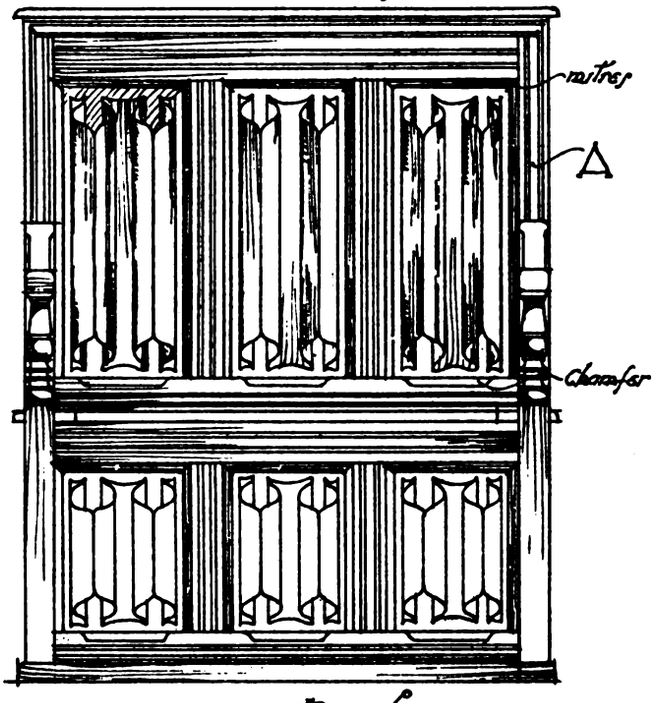
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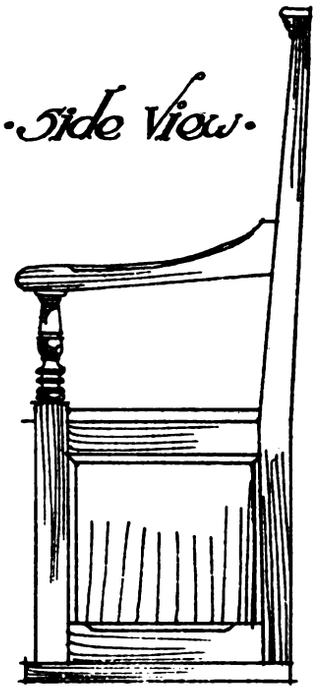
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Oak Settee · Watergate
Belonging to Mr. G. F. Fe

12 6 0 1 2 3
Scale of Feet



· Front View ·

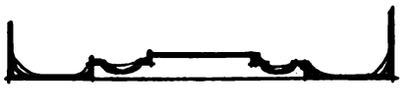


· Side View ·

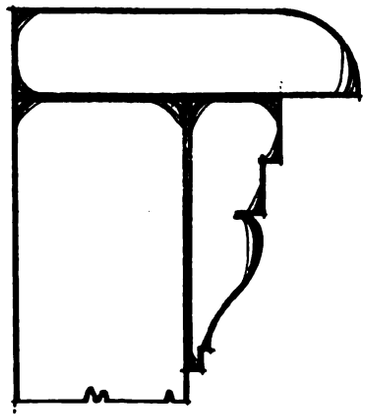


Plan

This old settee is at present in Bishop Lloyd's Palace, Watergate St., Chester, which was restored in 1899 and is now a museum, containing pieces of furniture of all periods, with several specimens of old tapestries, and ironwork, etc. The old plaster work is well preserved, and the ceilings are good examples of the craftsmanship of the period. There are two large fireplaces and an old staircase remaining.



· Detail at A ·



Capping.

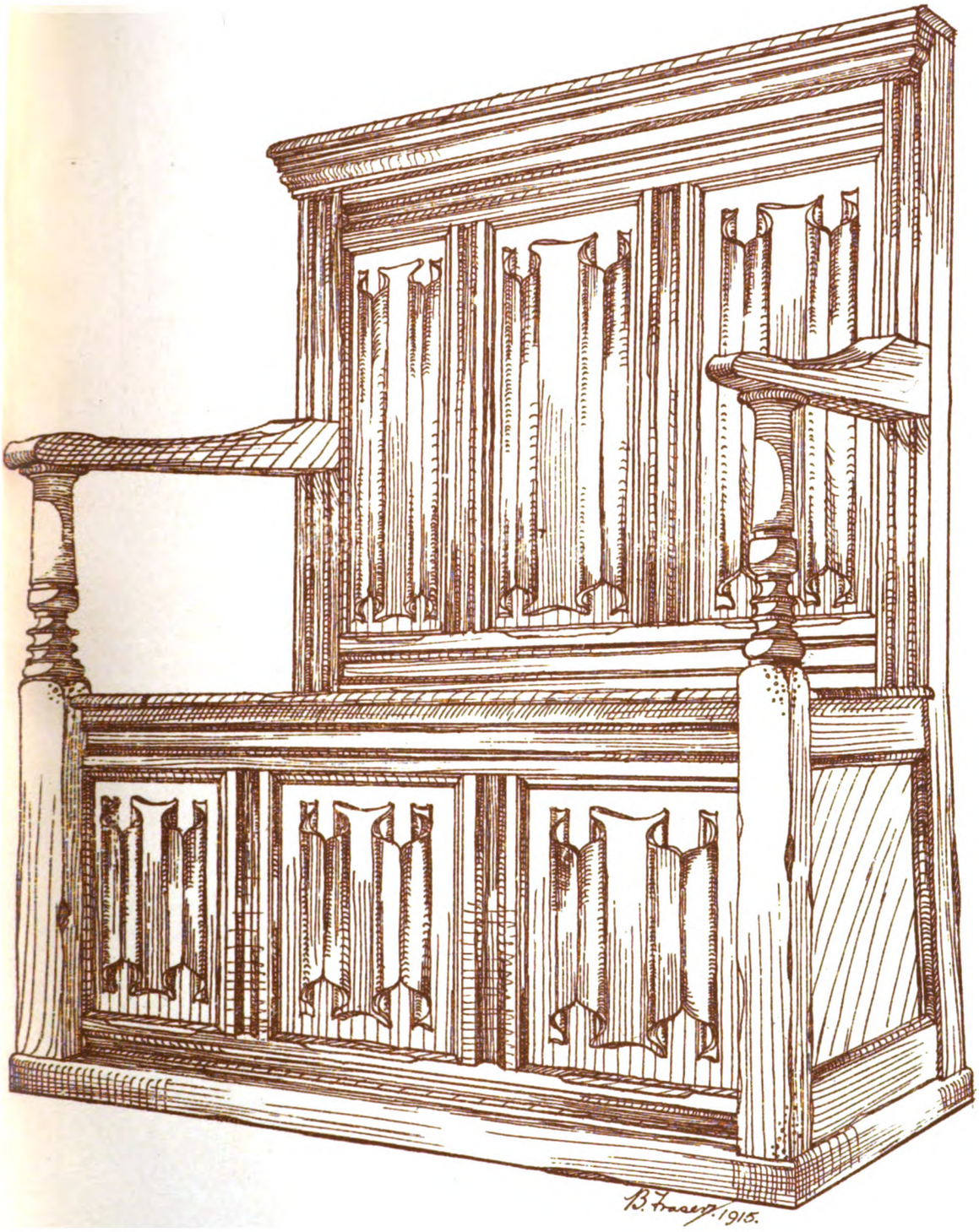
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April 23rd 1915.

Street · Chester ·

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Measured and Drawn
by B. Fraser. Jan. 1915.

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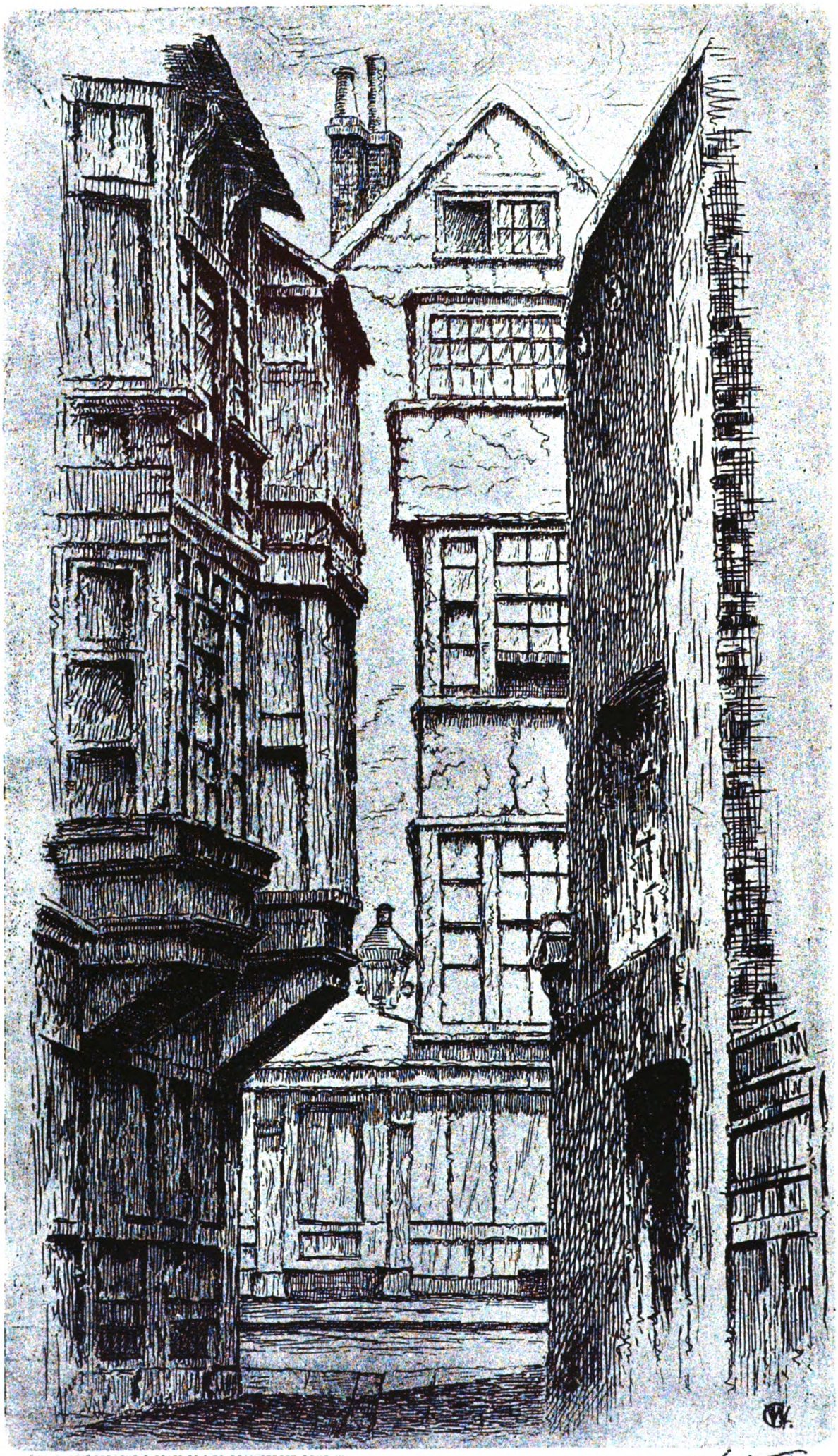
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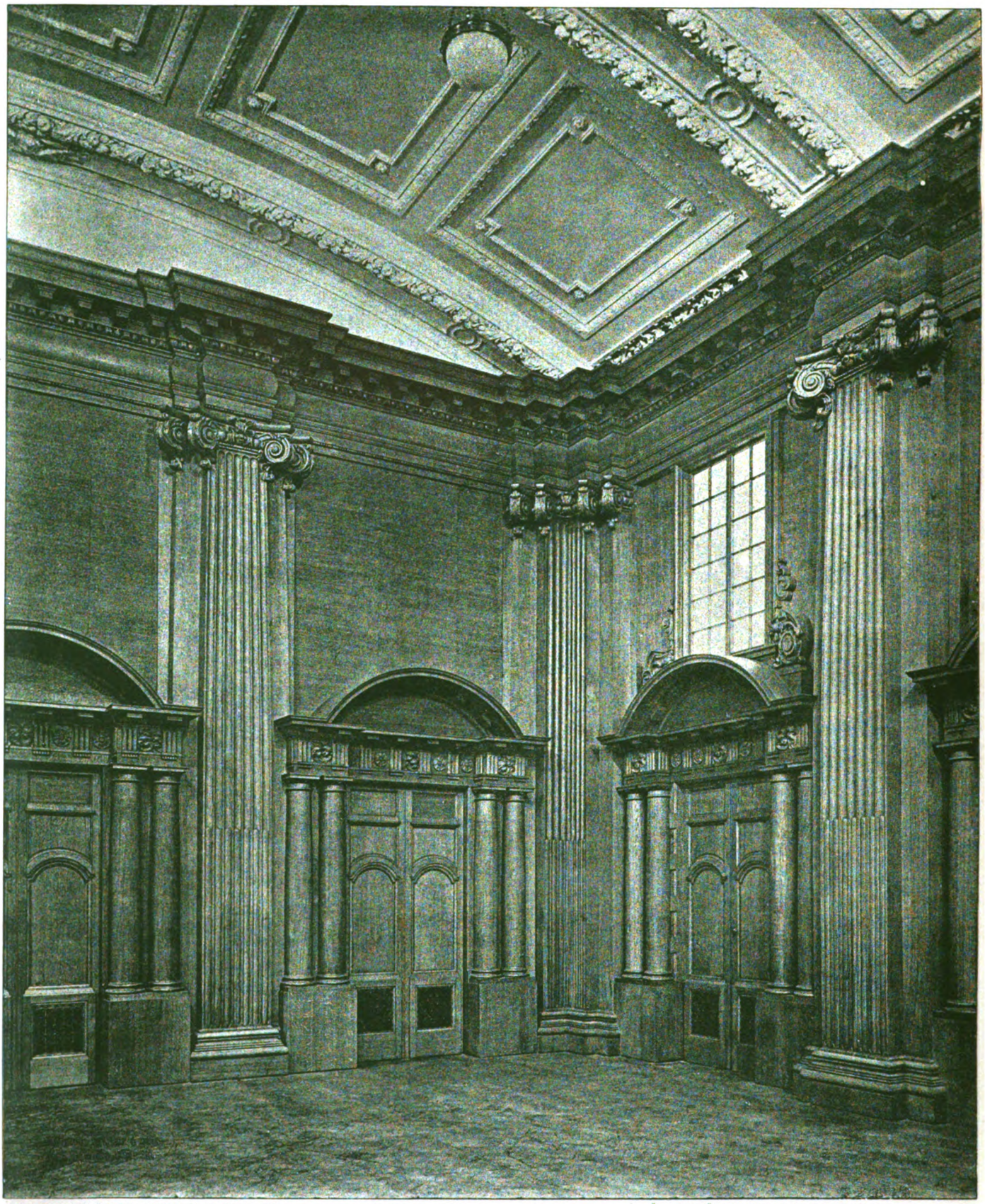
NEW COURT, CLOTH FAIR, SMITHFIELD.

From an Etching by Mr. HY. G. WEBB.

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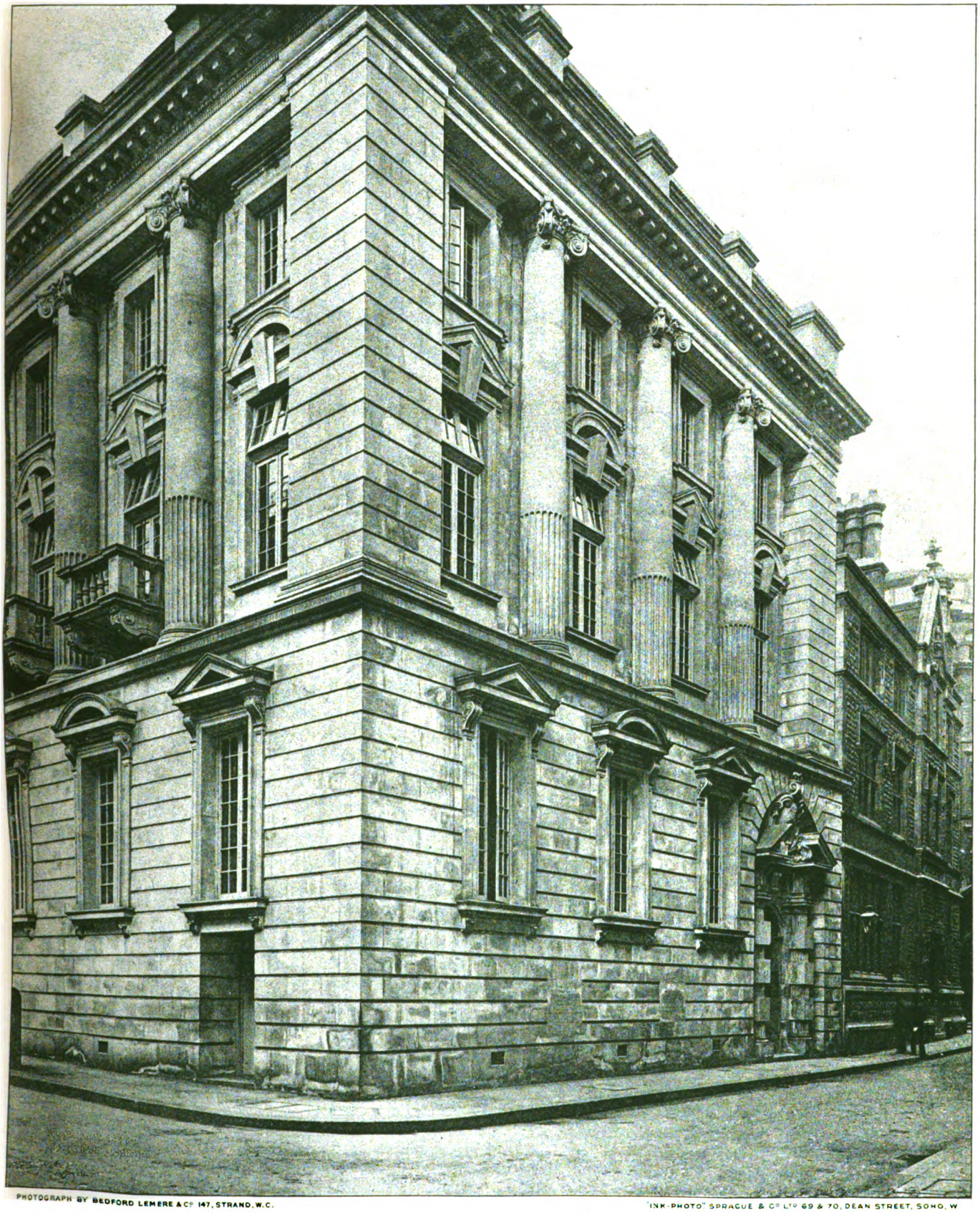
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GRESHAM COLLEGE, E.C.: THE HALL.

Messrs. SYDNEY PERKS & DENDY WATNEY, Architects.

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Hy G. Webb

N.E. Side of St. Bartholomew's Church, Smithfield.

From an Etching by Mr. HY. G. WEBB.

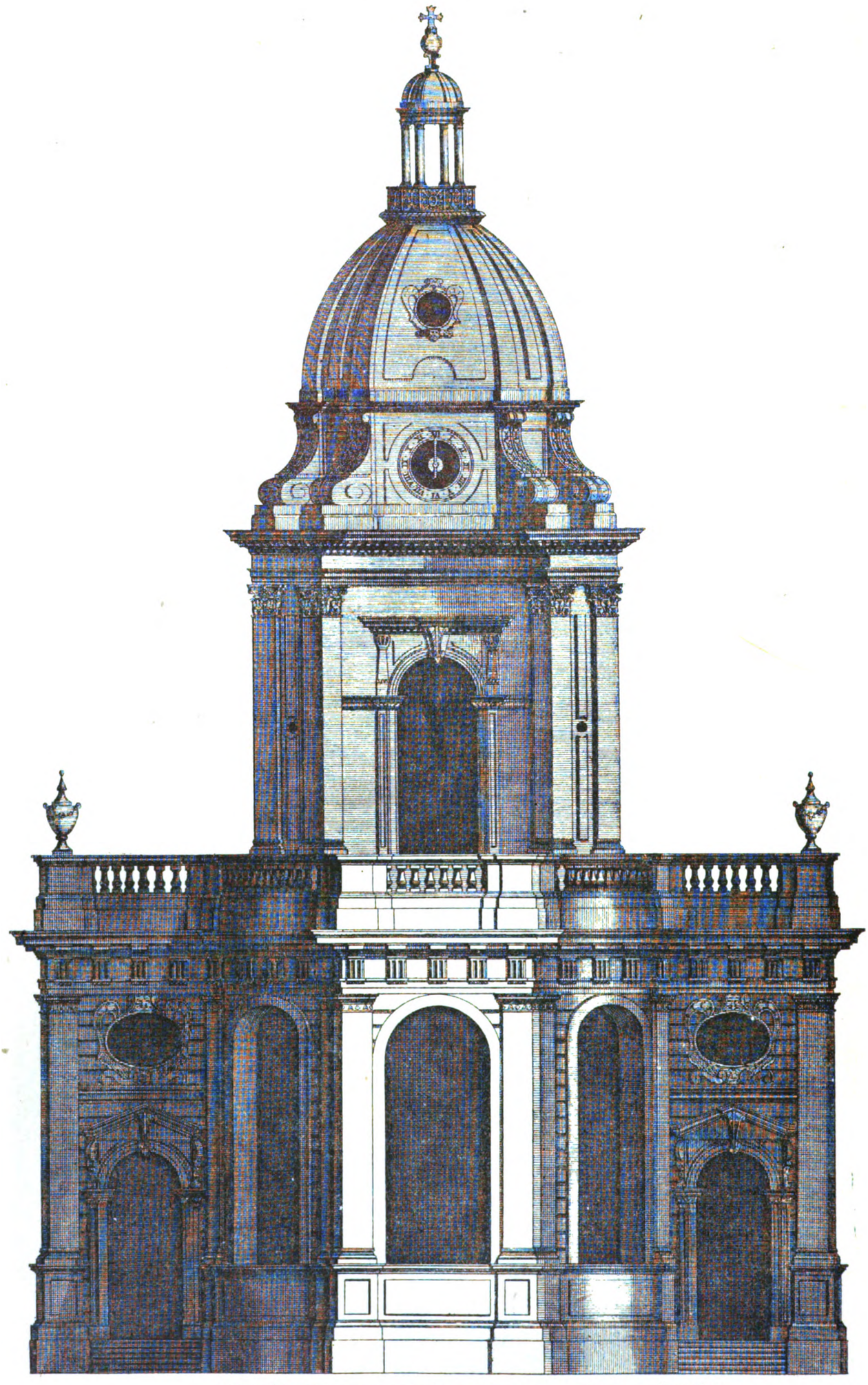
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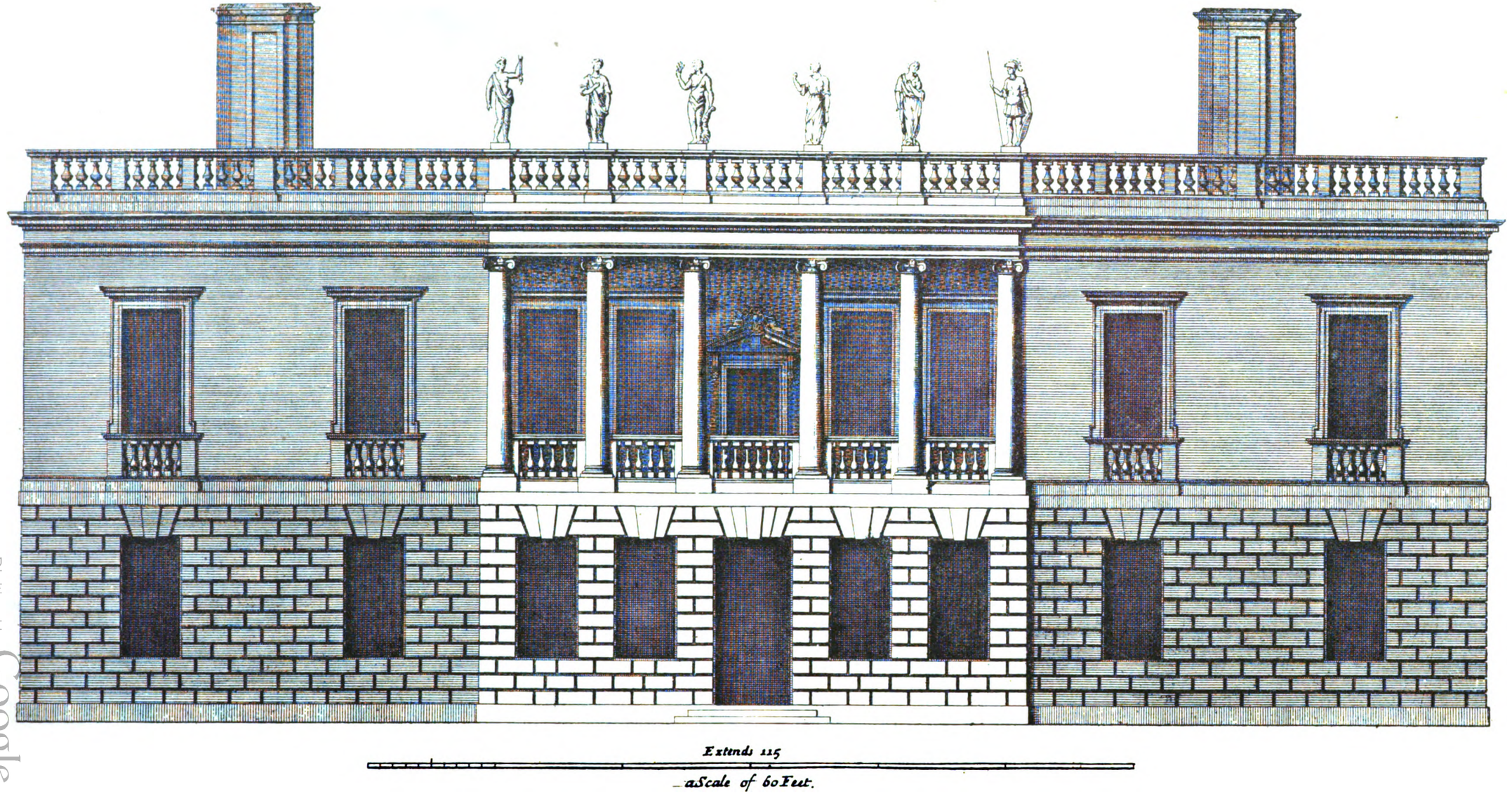
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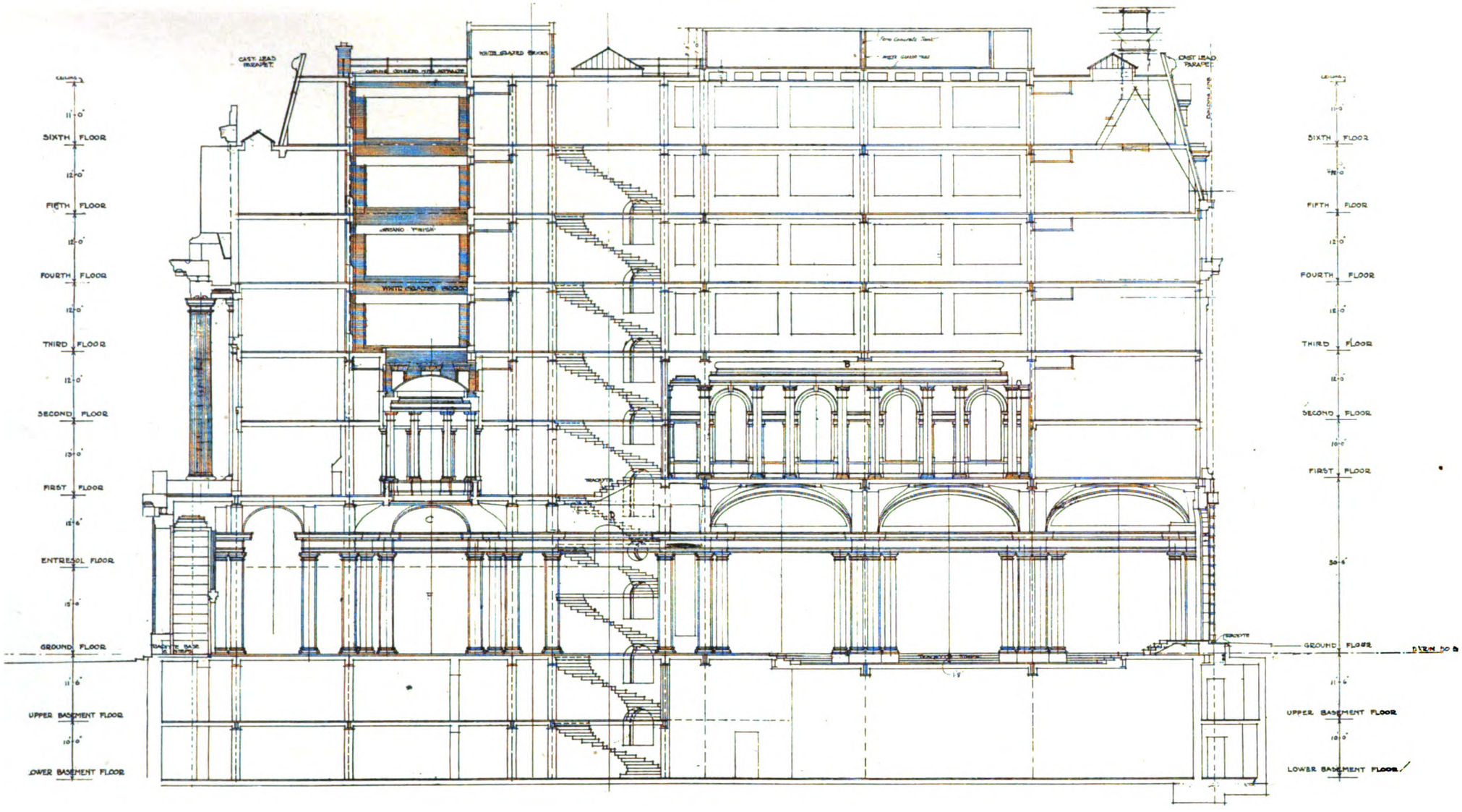


ELEVATION OF QUEEN'S HOUSE, GREENWICH.

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LONGITUDINAL SEOTION A-A.

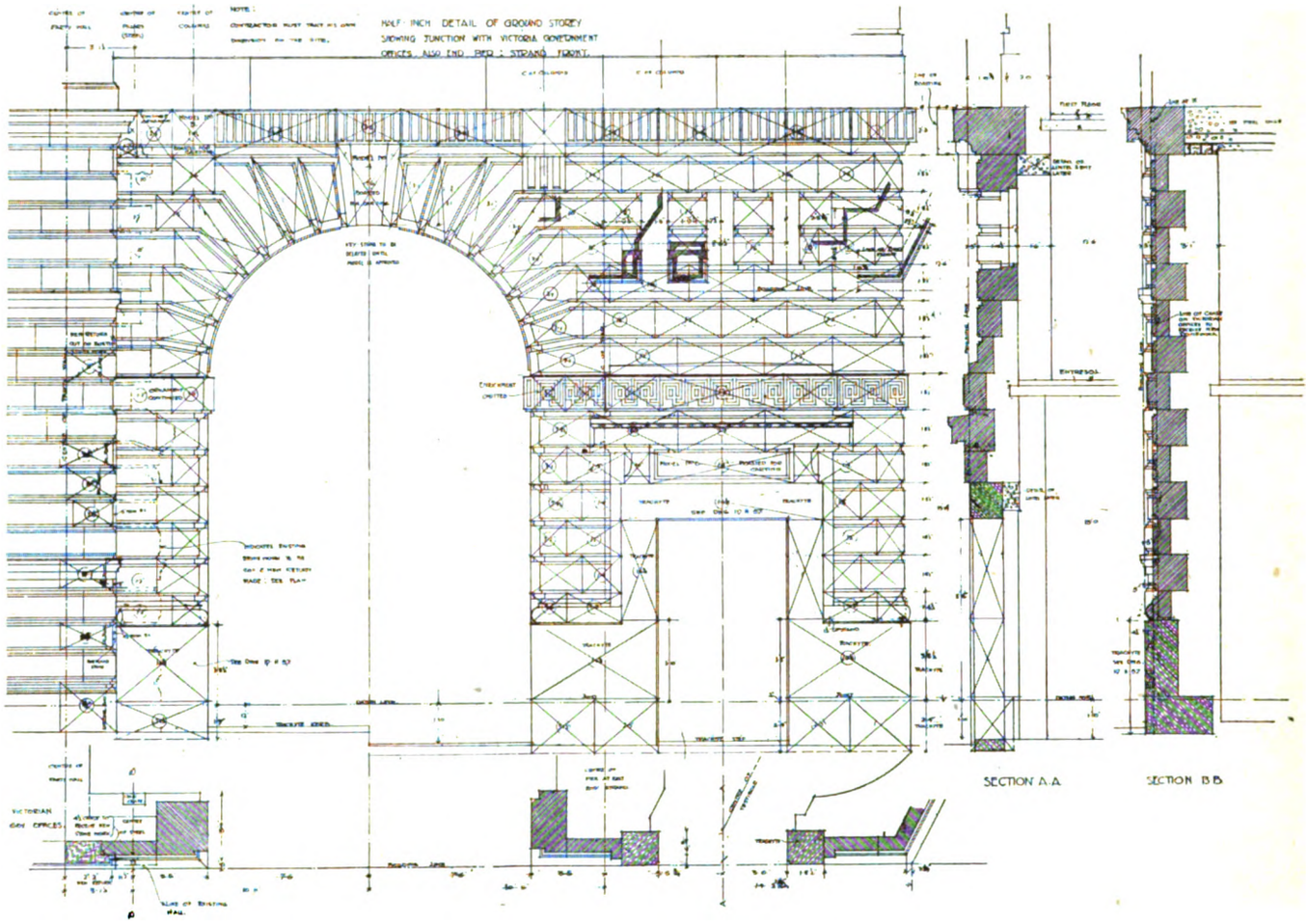
SCALE

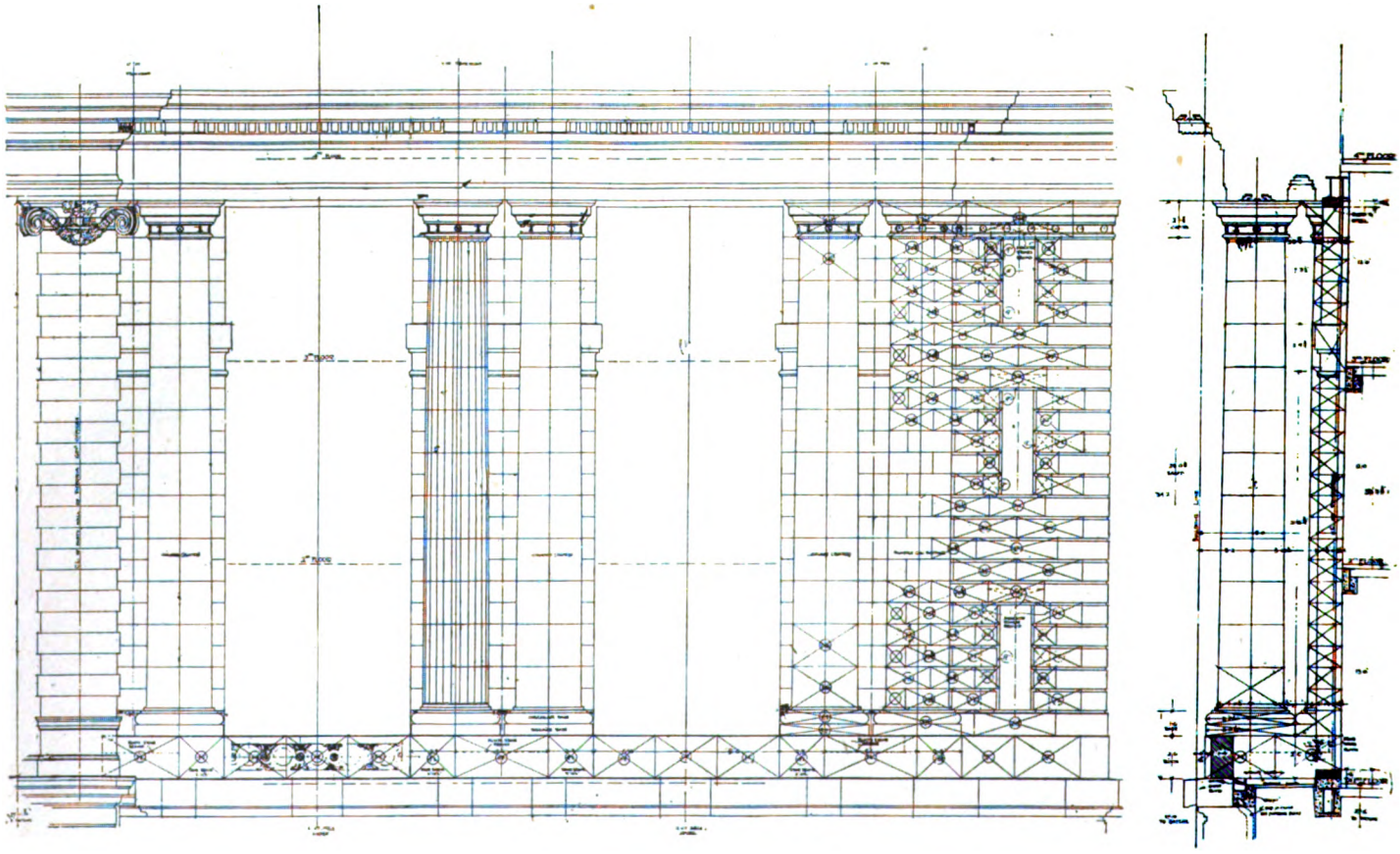
AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON: LONGITUDINAL SECTION.

MR. A. MARSHALL MACKENZIE, LL.D., A.R.S.A., F.R.I.B.A., AND MR. A. G. R. MACKENZIE, F.R.I.B.A., ARCHITECTS.

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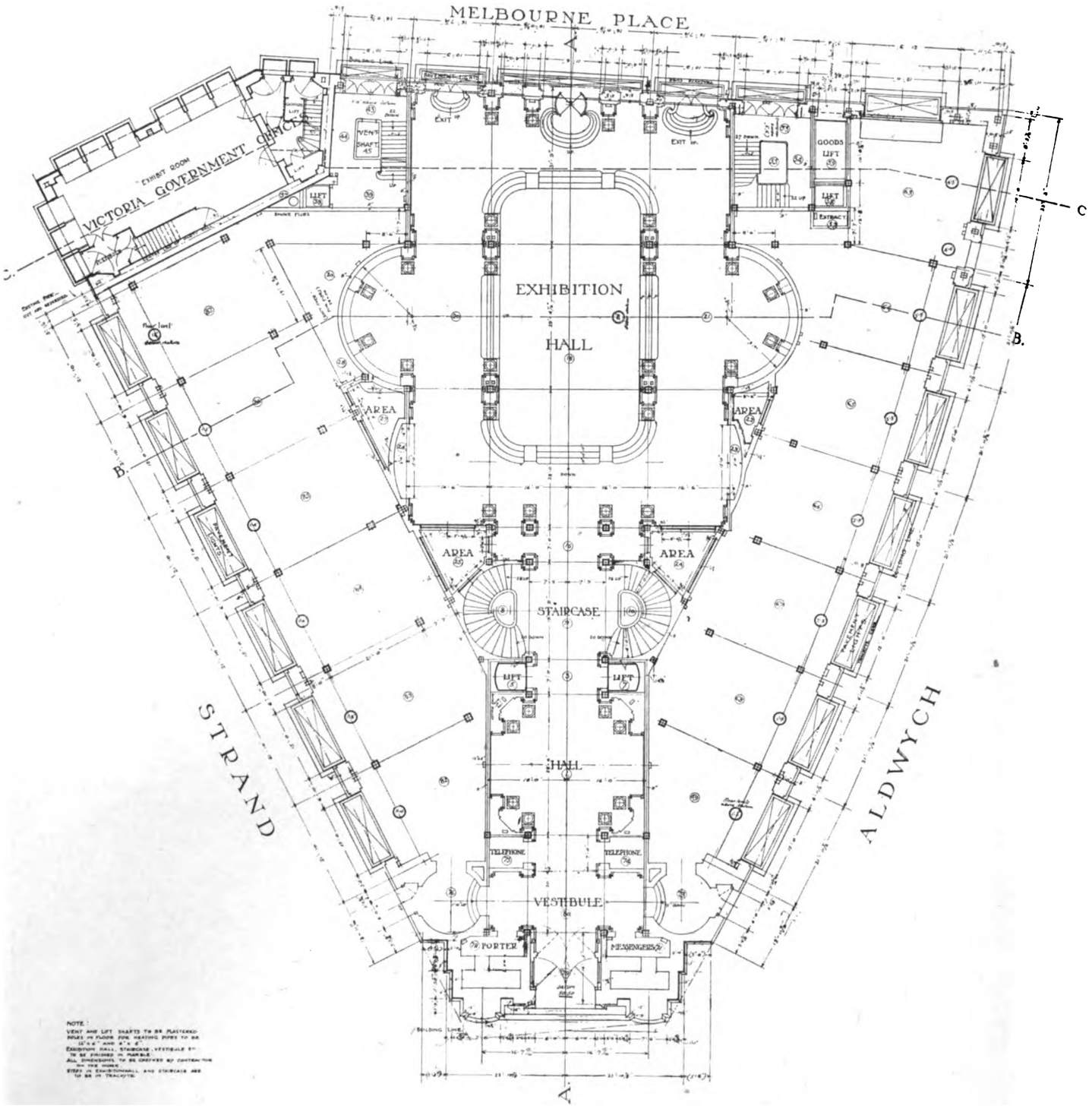
AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON: DETAILS.

MR. A. MARSHALL MACKENZIE, LL.D., A.R.S.A., F.R.I.B.A., AND MR. A. G. R. MACKENZIE, F.R.I.B.A., ARCHITECTS.

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GROUND FLOOR.

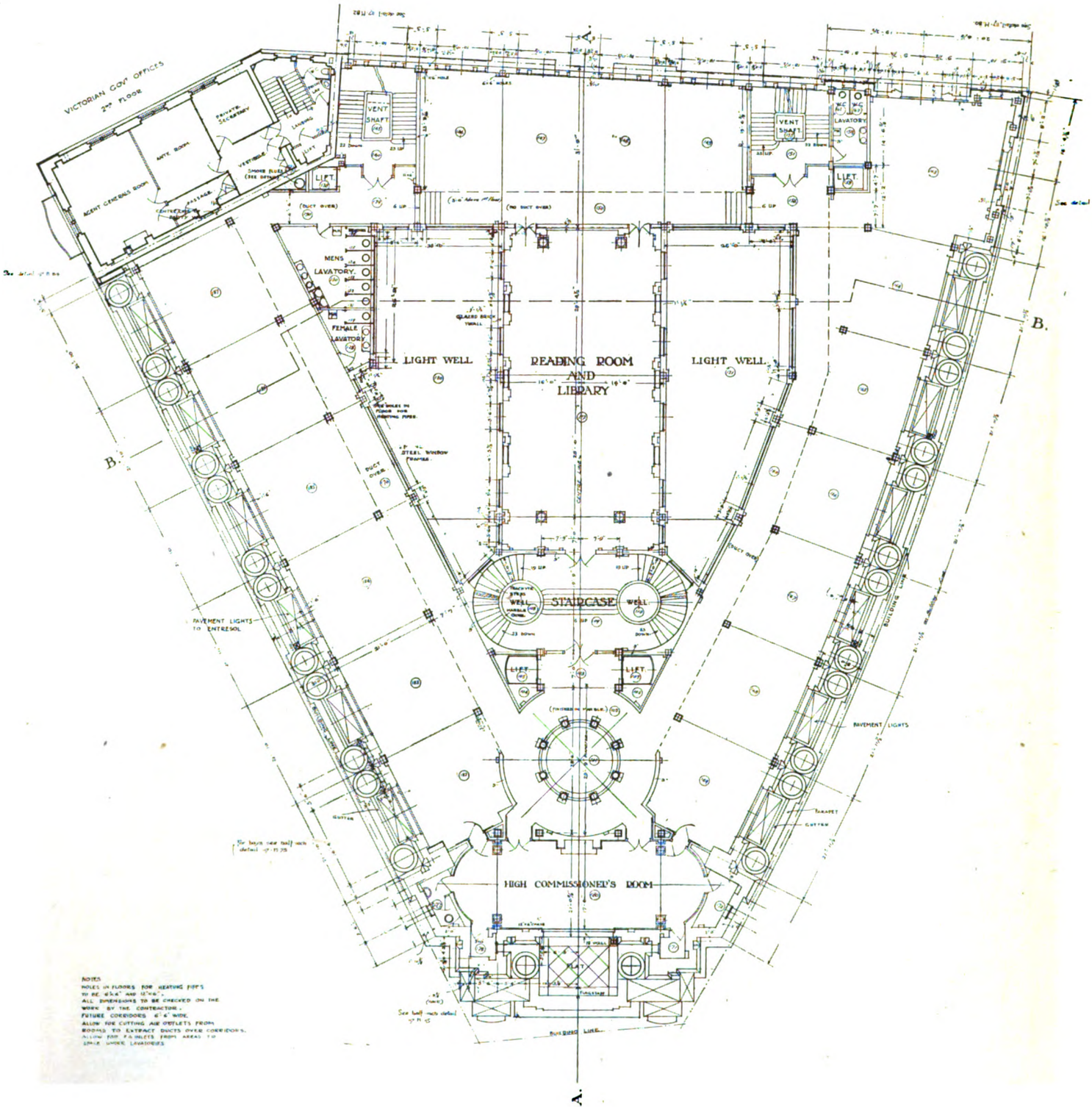
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AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON: GROUND FLOOR PLAN.

MR. A. MARSHALL MACKENZIE, LL.D., A.R.S.A., F.R.I.B.A, AND MR. A. G. R. MACKENZIE, F.R.I.B.A., ARCHITECTS.

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ALLOW FOR CUTTING AIR OUTLETS FROM ROOMS TO EXTRACT DUCTS OVER CORRIDORS.
ALLOW FOR FRESH INLETS FROM AREAS TO SPACE UNDER LAVATORIES.

FIRST FLOOR.

SCALE

AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON: FIRST FLOOR PLAN.

MR. A. MARSHALL MACKENZIE, LL.D., A.R.S.A., F.R.I.B.A., AND MR. A. G. R. MACKENZIE, F.R.I.B.A., ARCHITECTS.

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Mr. Graham Mould, upon the jury's verdict, applied for a mandatory injunction for the removal of the bank, but the Judge held that as the damages found by the jury were so slight, and as the owners and lessees would in future be entitled to bring further actions as additional damages actually arose, no injunction would be granted.

On the point of the question of costs he awarded the plaintiffs costs as regards the occupiers' claims, but not in respect of the owners' claims; the defendants in addition to pay their own costs.

THE REPORT OF THE LAND ENQUIRY COMMITTEE: URBAN HOUSING.*

By C. S. JOSEPH (Visitor).

THE portion of the Land Enquiry Committee's Report appointed for consideration to-night is that relating to Housing, which is dealt with in pages Nos. 1 to 222 of Volume II., and forms Part I. of that volume.

It is pre-eminently first among the subjects dealt with in the Enquiry, not only by reason of its magnitude, but also on account of its intimate effect upon the health, prosperity, and progress of the nation. The very magnitude of the subject renders it extremely difficult to be dealt with, especially when it is desired, as is my task to-night, to examine the subject in a short paper within a limited time, and it is obvious that I can only select some of the outstanding principles for consideration.

The Report gives many examples and much information as to the existing conditions in the large towns and cities of England, and although we may differ in some minor respects, we must unfortunately admit that only too much of the unsatisfactory conditions disclosed by the Enquiry is true. These conditions have, so far as I know, not been denied by those who are well informed on the question, and have afforded a subject for effort on the part of social reformers for many years. Parliament has from time to time devoted attention to them, but, with it all, progress has not been made to the extent that might have been expected or which the necessities of the case required. If the Report of the Enquiry Committee succeeds only in directing further attention to this vitally important matter, the efforts of that Committee will not have been in vain.

The conclusions of the Enquiry Committee may be stated as embodying the following main principles:—

(1) That a large proportion of the population, to the detriment of the State, occupy overcrowded and insanitary dwellings, due to the scarcity of suitable accommodation at a reasonable rent.

(2) That the supply, whether by public authorities, public utility societies, or private enterprise, is very much less than the demand.

(3) That the high cost of land, the incidence of rates, and local by-laws militate against the supply being maintained.

To remedy the evils indicated in their conclusions the Committee make fifteen recommendations. It is impossible to deal with them all, but, again seeking to ascertain the principles underlying the conclusions, I think they may be stated as follows:—

(1) That as a result of a complete survey of their district, a local authority shall prepare a scheme for the provision of the necessary housing accommodation, particularly for the population likely to be permanently resident within their area.

(2) That where sites are not really available, transit schemes should be promoted, and undeveloped areas town-planned and congested areas replanned.

(3) That public utility societies should be assisted financially, to enable them to provide such accommodation.

(4) That insanitary property should be improved and adapted to modern conditions in order to mitigate the hardships of the present closing order procedure.

I propose to examine the principles underlying these conclusions first, and then to discuss the proposed remedies as embodied in my summary of the principles covered by the recommendations.

1. There is probably nobody in this room who will disagree with the principle of that summarised by me as No. 1. Unfortunately too many of the population of our towns are living under conditions which militate against the physical and moral well-being of the inhabitants, and which are inimical to the much wider and important interests of the State, and any schemes that would lead to a marked improvement would not only receive the support but the hearty co-operation and goodwill of every member of the Surveyors' Institution.

Most of us are proud of our city or group of cities known as London, and, I think, most rightly so, and fancy that conditions here are better than in other large aggregates of population. It may, however, be taken as a sample of town life, and it will be instructive to examine the conditions as to overcrowding.

In the administrative county of London, excluding the extra-London urban districts, there were, according to the census of 1911, a population of 265,553 persons living in one-room tenements. The census returns for the same year also show that there were 32,351 tenements, each of one room, which were occupied by more than two persons. The returns also show overcrowding to an equal extent in tenements of two and three rooms.

Notwithstanding the overcrowding shown by these statistics, there has, however, been a great improvement in recent years. Large slum areas have been cleared, and large blocks of worn-out property have been pulled down and replaced by dwellings for the working classes. Those who have had experience spread over a period of years know how the best of the slum property twenty-five years ago was worse than some of the worst of to-day. Public opinion and the public conscience now demand a much higher standard, and, although the task is great and the progress apparently slow, those who can take a long view over a period of years can testify to the solid progress made. Apart from this, however, the effect of these clearances is much greater than appears at first sight. It is not extended to the persons displaced only, as they never, or very rarely, occupy the new buildings when erected. The new occupants vacate their dwellings and make room for the occupants of the grade immediately below them, thus relieving a pressure further down, and there is, therefore, a general levelling up. This, though slow at first, is cumulative in effect.

The provision of cheap means of locomotion has been the means of dispersing the population, and there is evidence of this in the East End, where overcrowding is not nearly so great as it used to be within quite recent years, so that the practice of paying key money for an empty tenement has now become extinct. This has had an effect upon site values to a most marked extent, and prices for land that could easily have been realised some ten years ago must now be discounted to the extent of 30 or 40 per cent.

2. In dealing with the question of supply it must be borne in mind that a large number of people must live near to their work, and this has become increasingly difficult owing to the commercialisation of the central areas and the diminution of the area available for residential purposes. The result of this is, necessarily, the overcrowding of the area that remains.

For those persons who need not, or do not desire to, live in the central districts, housing accommodation can be provided in the suburbs where land is cheap, and the areas so built upon could, with advantage, be town-planned to prevent monotony and overcrowding on the site.

My experience, however, has been obtained in the far more difficult problem of providing the necessary amount of accommodation with a constantly diminishing area available, and I propose particularly to deal with this more difficult aspect this evening.

Concurrently with a great rise in the standard of the requirements demanded by the working classes, there has been a marked increase in the cost of labour and materials used in building during the last twenty years, with the result that, with perhaps one or two exceptions, private enterprise has abandoned the attempt to provide housing accommodation in the central districts, as the possible return on capital could not exceed 6 per cent., and for some years past only public authorities, public companies, and public utility societies have made such provision.

It was my good fortune to succeed my father, who devoted many years of effort in helping to solve this difficult question, and I have personally been privileged to design and supervise the provision of accommodation for over 30,000 persons of the working classes in buildings erected in central districts where the problem is to provide the

* A Paper read at the Ordinary General Meeting of the Surveyors' Institution, held on Monday, April 12.

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Broadmoor.—Criminal Lunatic Asylum.
Barnsley.—Workhouse; Infirmary; Baths and 8 Council Schools.
Brighouse.—Clifton Church.
Chester.—Town Hall.
Chadderton.—Town Hall.
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Liverpool.—"Meccano" Works; Grove Hotel, Wallasey; Mariners' Home; Merchant Taylors' School; Majestic Picturedrome; Synagogue, Princess Road; Tivoli Theatre and Café; Penrhyn Street Council School; Rice Lane Model Council School, Hope Street Technical School, Clarence Street Secondary School.
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St. Helens.—Borough Sanatorium, Provident Hospital, and Council Schools.
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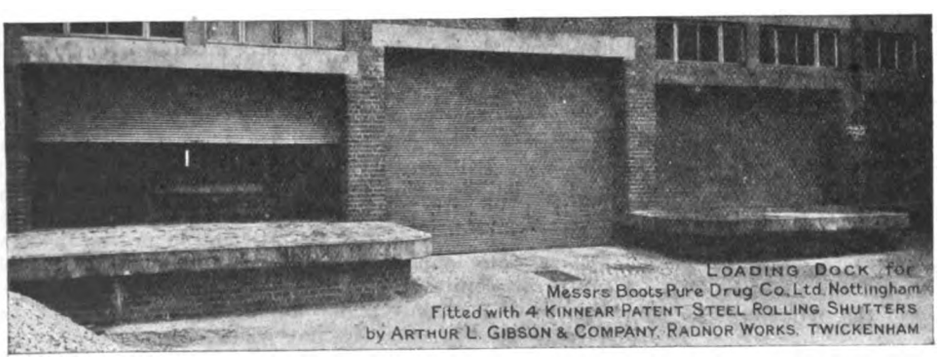
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maximum amount of satisfactory healthy dwellings on the sites available, having due regard to ample open spaces between the buildings.

The supply, however, still falls short of the demand, and in every instance that has come under my notice it is quite the usual experience to find all the tenements are let before the buildings are completed. At the present time there is a long waiting list of suitable tenants who desire to occupy tenements in blocks of buildings, of which I have intimate knowledge, as soon as any are empty. The same aspect of the problem is emphasised by the fact that in the whole of the buildings erected under my supervision the average loss from empty tenements, including loss of rent by reason of removals, does not exceed ½ per cent. on the gross annual rentals.

3. In my opinion it is not the case that the cost of land has so important a bearing on the problem as is indicated in the Report. I am aware that a great public authority, which has done much to stimulate the provision of good dwellings for the poor, has at times experienced a difficulty to pay anything for the site in designing dwellings upon the land available; and in some cases it would even appear from their published reports that they require the site for nothing and a subsidy towards an estimated deficiency. Now, this is the more remarkable in view of the fact that they are specially placed so far as financial arrangements are concerned, many of their calculations that I have noticed carrying interest on capital at only 3 or 3½ per cent.

Notwithstanding this, it is quite feasible to pay 7*s*. 6*d*. per foot for a site upon which dwellings may be erected and yet obtain a fair return on the capital outlay, and I have known instances where a public utility society has paid as much as 17*s*. 6*d*. per foot for land.

Although the cost of land naturally has a bearing upon the rent that has to be paid by the tenant in order to obtain the necessary return on the capital outlay, experience shows that in normal cases, where land does not exceed 5*s*. per foot, the charge per tenement attributable to the site does not exceed 9*d*. per week of the rent, and that even if the cost of the land were increased to 7*s*. 6*d*. per foot, the rent per tenement payable in respect of the land would only amount to 1*s*. 4*d*. per week.

There is some considerable difficulty in obtaining cleared sites in central districts, as it very rarely happens that a large area comes into market as vacant land. There are, however, large areas, properly developed nearly a century ago, covered by worn-out and unsatisfactory buildings with large gardens, standing therefore on extensive plots of land, which now only afford accommodation for a relatively small number of persons, and which cause much anxiety to local authorities and to the owners.

My experience has been that in many districts this class of property can be purchased if the matter is properly approached at a price which would represent but little, if any, more than the present-day value of cleared land, and at a figure which would enable properly designed blocks to be erected, housing many more persons than are displaced by the demolition, lettable at rents within the means of the poorest, and returning a reasonable amount upon the capital involved.

As an example of this I may refer to the experience of the Guinness Trust. This Trust only lets to persons with a strictly limited income, who would probably not be taken as tenants by private owners or public companies. The average earnings of the head of each family is only 19*s*. 1½*d*. per week, and the total average income of each family does not exceed 28*s*. per week.

Public authorities cannot apparently cope so successfully with the problem as an interesting announcement which appeared in the public press would seem to indicate. The chairman of the housing committee of the authority concerned stated that it had been decided to abandon the idea of installing baths, as their provision would have entailed an additional 1*s*. per week to the rents. My experience has shown that the extra rent required where baths are provided is only 2*d*. per week.

A far more serious problem than the cost of the land is that of the rates. These, like the poor, we have always with us, and there has been a constant tendency to increase. We have only to look back, say, ten years, and observe what the increase has been, to see how serious is the position. The amount of the rates may mean the difference between success and failure of a scheme, an experience which has caused schemes propounded by public authorities and private persons alike to be abandoned. This is the more serious because the need for a large provision of good accommodation, letting at a low rent, is greatest in the poorer and overcrowded districts, which are, without exception, those which are burdened with the greatest need for public expenditure, resulting in the highest rate in the pound.

Even after a scheme has been carried out, the progressive tendency of the rates renders necessary some adjustment of the financial arrangements in order to preserve equilibrium. It is not possible to modify the capital arrangements, and if the fixed charges are to be met, the only alternative is to raise rents, irrespective of whether the tenants can properly afford to devote any larger proportion of their low earnings to rent. But this difficulty as to rent is further aggravated by the action which seems to be growing among London borough councils of reducing or refusing the compounding allowance. Surveyors know that this is an allowance that a borough council can make if they so agree with an owner of working-class dwellings in return for his paying rates whether the premises are occupied or not, and also for agreeing to be rated in lieu of the occupier and so simplifying collection. Some borough councils, notably Islington and Camberwell, decline to make any allowance, and are collecting the rates direct from the tenants. Although this increases the cost of collection to them, it is also to the disadvantage of the owner, so that the necessity arises for increasing the rents payable by the tenants where the owner continues to collect an inclusive rent. The result has further been that the erection of dwellings is restricted in those boroughs, as no one will risk the erection where the allowance has been refused. I have personally advised against the purchase of sites in Islington, and lately also in Camberwell, and I have no doubt that in other cases agencies for the provision of dwellings have been similarly advised in similar circumstances.

I find that the actual increase in the rents that would have to be charged in consequence of the compounding allowance not being allowed amounts to as much as 3*d*. per tenement per week, or about one-third of the rent attributable to the land.

The cost of building generally, as compared with twenty years ago, or even ten years, has considerably increased, but the cost of dwellings has not increased at all. It is good practice that fresh and improved methods are designed to meet exceptional difficulties whether they be of greater requirement, a higher standard, or increased cost of production. This fundamental economic law has not been abrogated in the design and erection of artisans' dwellings. As the cost of certain methods increased it has been necessary to devote special attention to devising other means which would involve less expenditure, whilst not militating against sound work and a reasonable maintenance. That efforts in this direction have not been without success is shown by the fact that good block dwellings can be erected at a cost very little in excess of that of fifteen years ago, while the standard of the accommodation provided is far superior. It is to a considerable extent a question of construction and a readiness to spare no effort to economise in the right direction.

According to the latest tenders received, the very best class of block dwellings can be erected at a cost of 8.95*d*. per foot cube, and this figure includes the provision of a bath in each tenement, hot- and cold-water supply, the use of drying-rooms, perambulator-sheds, and covered playgrounds, and the fitting of venetian blinds to every window.

I should also add that in this particular scheme the foundations were costly, so that I think my contention that the cost of building this class of property has not increased is justified, as, fifteen years ago, the cost was 8¾*d*. per foot cube, and did not include the modern conveniences mentioned above.

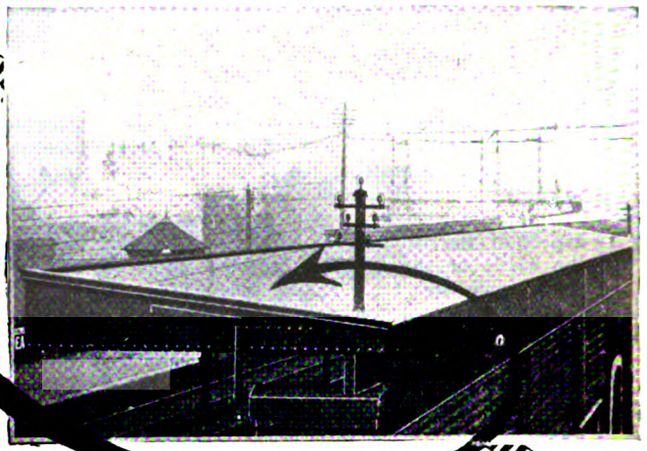
This success in first cost has not been at the expense of maintenance, as I find that the percentage of gross rents required for repairs even aften ten years does not exceed 6 per cent.

(To be concluded.)

A COMBINED meeting of the Junior Art Workers' Guild and the Architectural Association will be held at No. 9 Queen Square, Bloomsbury, on Thursday, April 29, at 8 P.M., when papers will be read by Mr. H. M. Fletcher (hon. secretary Architectural Association) and Mr. Edward Spencer (of the Junior Art Workers' Guild), entitled "The Interdependence of the Architect and Craftsman."

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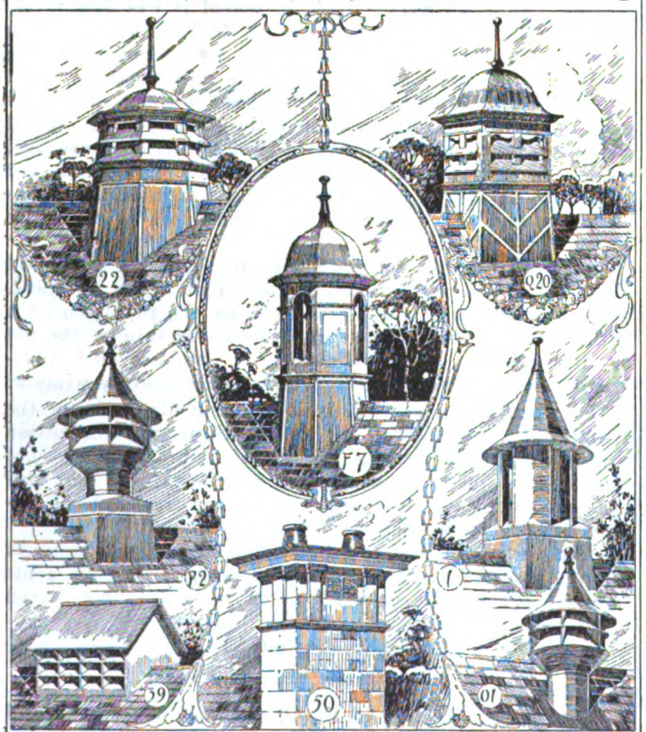
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Reading.—St. Giles' Parish Hall.

BUCKINGHAMSHIRE.
Aylesbury.—Engine-room at Messrs. Hills & Partridge's Mill.
Additions to Messrs. Hazell, Watson & Viney's power-house.

CHESHIRE.
Frodsham.—Proposed school (for 200 places), for the National Children's Home and Orphanage.
Wilmslow (near).—Parish room, Lindow (£1,250).

CUMBERLAND.
Carlisle.—Factory, Nelson Street: extension, for Messrs. Buck & Sons.

DERBYSHIRE.
Heanor.—Proposed isolation hospital.
Penmoor.—Hospital: extension (£4,100).

DEVON.
Torquay.—Electricity Generating Station: alterations.

DURHAM.
Beamish.—Parish Church: proposed enlargement.
Fence Houses.—Ten houses, for Mr. J. Berryman.
Greencroft.—Proposed church.
Houghton-le-Spring. — Banking premises, Sunderland Street: alterations, for the Bank of Liverpool.
Jarrow.—Hospital: extension.
Stockton-on-Tees.—Secondary School: additions and alterations.

ESSEX.
Grays.—Premises, High Street, for the Co-operative Society.

HAMPSHIRE.
Southampton.—New buildings, the Eastern District School, for the Council.

LANCASHIRE.
Bolton.—Cattle auction mart, Thynne Street. Borough engineer.
Motor garage, Great Moor Street, for Messrs. W. H. Legat & Co.
Stables, Kay Street, for Bolton Co-operative Society.
Cotton warehouse, Musgrave Road, for Musgrave Spinning Company.
Weaving shed, King Street, for Messrs. R. Walker, Ltd.
Coppull.—St. John's Sunday school.
Manchester.—Royal Exchange: enlargement and improvements (£600,000).
Rishton.—Cinema, High Street, for the Empire Picture Palace Company (Rishton), Ltd.

LINCOLNSHIRE.
Spalding.—Children's home, for B.G. (£1,200). Mr. W. Bond, architect, 11 Elmer Street, Grantham.

MONMOUTHSHIRE.
Bedwellty and Rhymney.—Higher elementary schools.
Sirhowy.—Glanhowy School.

NORTHUMBERLAND.
Newcastle-on-Tyne.—Rutherford College: girls' school assembly hall (£4,900). Messrs. Marshall & Tweedy, architects, 17 Eldon Square.

NOTTINGHAMSHIRE.
Nottingham. — Council dwellings, Carter Gate and Manvers Street.
Warsop.—Proposed Council school for 600 places.

SOMERSET.
Bath.—New Royal Baths (£3,600) and Grand Pump Room (£1.300).
Taunton.—House, Richmond Road: addition, for Mr. Theo. Taylor.
No. 12 Mansfield Road: workshop, for Mr. W. C. Smith.

STAFFORDSHIRE.
Burton-on-Trent.—St. Mark's parish room, Winshill.
Lichfield.—Motor garage, London Road: additions, for Mr. Wigham.
Motor garage, Tamworth Street, for Mr. J. Lester.
Stoke-on-Trent.—Secondary school, Hanley Park.

SURREY.
Croydon. — Woodside Parish Church: enlargement (£2,350).

WARWICKSHIRE.
Kineton.—House, Banbury Road, for Lord Willoughby de Broke.

WORCESTERSHIRE.
Kidderminster.—St. George's Church: vestry.

YORKSHIRE.
Barnsley.—St. Peter's Sunday school.
Brighouse.—St. Paul's Wesleyan Sunday school (£4,500).
Clayton.—Five houses, Arkwright Street, for Mr. A. Shepherd.
Grassington.—Sanatorium (£24,000).
Huddersfield. — Bungalow, Crosland Moor. Mr. N. Culley, A.R.I.B.A., architect, 13 John William Street.
Leeds.—Yeadon and Guiseley Secondary School: proposed extension.
Rotherham.—Proposed technical school, Howard Street.
Sowerby Bridge.—Cinematograph theatre, Wharf Street. Mr. R. E. Horsfall, architect, 22A Commercial Street, Halifax.
House, Industrial Road, for Mr. A. Dyson.
Holme Ironworks: extension, for Messrs. Summerskill Brothers.

WALES.

Abercynon.—Electricity sub-station, for Mountain Ash U.D.C. Mr. W. G. Thomas, Council surveyor, Town Hall, Mountain Ash.
Cardiff.—Greek school for seventy places.
Llanelly.—Proposed S.A. Hall (£3,000).

SCOTLAND.

Aberdeen.—New steading, Mackie's Steps; also alterations to steading, Northside, for the Town Council. City architect, 224 Union Street.
Arbroath.—Offices, Hill Street, for the Prudential Assurance Company.
Villa, Annesley, for Mr. Gordon Fraser.
Dumbarton.—County sanatorium.
Glasgow.—Buildings, St. George's Road. Messrs. R. & A. Bogie, builders, Napiershall Street.
Buildings, Woodville and Albion Streets, for Messrs. Blair, Campbell & McLean.
Chocolate factory, Anniesland: addition, for Birrell, Ltd.
Proposed hospital, Elder Park, Govan.
Stores and factory, Bilsland Drive and Murano Street, for Messrs. Sandeman Bros.
Works, Garngadhill: addition, for Tharsis Sulphur and Copper Company, Ltd.
Works, Caxton Street: additions and alterations, for Messrs. Barr & Stroud, Ltd.
Paisley.—Proposed school.
Rosyth.—Proposed school. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

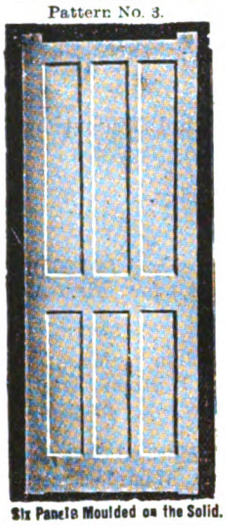
IRELAND.

Balrothery District.—Eighty-seven labourers' cottages. Mr. A. Scott, C.E., Council architect, 49 Upper O'Connell Street, Dublin.
Cork.—Two villas, Old Blackrock Road. Messrs. W. H. Hill & Son, architects, 28 South Mall.
Dundalk.—Technical School: alterations.
Larne.—Fever Hospital: boiler-house. Mr. Pinkerton, architect.

THE Council of the Society of Architects, in response to an appeal for financial assistance from the Committee of the Architects' Volunteer Training Corps, which now forms the 4th Battalion of the Central London Regiment (Volunteers), is sending the committee a donation of twenty-five guineas towards the Preliminary Expenses Fund. Major E. C. P. Monson (T.D.), President of the Society, has been gazetted sub-commandant of the corps, and will be glad to hear from any members of the Society who are not eligible for H.M. Forces and have not already joined any other Volunteer Corps, with a view to their joining the Architects' Corps. It may be of interest to note that Major Monson served for twenty-two years as an officer in the Territorial Force, retiring some eighteen months ago from the City of London Regiment, Royal Fusiliers, with the rank of Major, which he had previously held for eight years. Major Monson has been honoured with the Territorial Decoration, and has the Volunteer Long Service Medal and King Edward's Coronation Medal.

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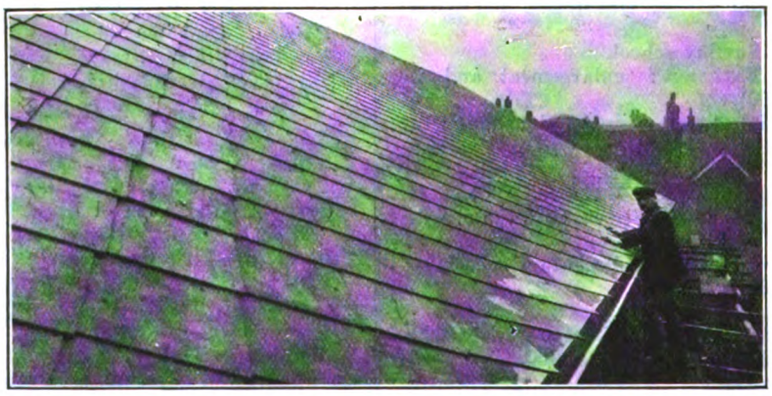
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THE
Architect and Contract Reporter.
FRIDAY, APRIL 23, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—The Louth County Council invite architects to submit designs in competition for new county offices, to be erected in Dundalk, and have appointed Professor William A. Scott, A.R.I.B.A., F.R.I.A.I., A.R.H.A., to act as their assessor. Conditions of competition may be obtained from the county secretary on receipt of a deposit of two guineas, which will be returned on receipt of a *bona-fide* design, or the return of the conditions within seven days. Mr. Charles McAlester, county secretary, Courthouse, Dundalk.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

BLACKWOOD (MON.).—April 28.—For erection of premises at Oakdale Village, near Blackwood, for the Tredegar Industrial and Provident Society, Ltd. Send applications and £2 2*s.* deposit by April 17 to Mr. A. F. Webb, M.S.A., architect and surveyor, Tredegar Chambers, Blackwood.

DARLINGTON.—April 26.—For alterations to premises in Priestgate, for the Darlington Co-operative and Industrial Society, Ltd. The Secretary, the Society's Office, Priestgate.

DARTON.—May 10.—For building boundary walls and execution of other works in connection with the enlargement of Gawber Churchyard, for the Darton Urban District Council. Mr. S. Wilkinson, surveyor, Council Offices, Darton, Yorks.

DEWSBURY.—April 27.—Tenders from all trades (except plasterer) are invited for erection of storage sheds at Savile Mills, Savile Town. Messrs. C. H. Marriott, Son & Shaw, Church Street Chambers, Dewsbury.

HANGING HEATON.—For all or separate sections in erection of new club and institute for Hanging Heaton. Send in names and address, and state whole or part they wish to take in same, as early as possible to the Secretary, 138 High Street, Hanging Heaton, near Dewsbury.

HULL.—May 6.—For erection of offices, wheel shop, and alterations to workshops, &c., engine sheds, Dairycoates, for the North-Eastern Railway Company. Plans and specification may be seen and quantities and further information obtained upon application on or after the 20th inst. to Mr. Arthur Pollard, company's architect, York. Duplicate plans may be seen on application to the Stationmaster, Paragon Station, Hull. (See advertisement.)

IRELAND.—April 26.—For building fifty-nine labourers' single cottages and ten cottages in pairs, for the Rathdrum Rural District Council. A contractor may tender to erect all the cottages or for such proportion thereof as he considers he could complete satisfactorily within six months after they have been laid out by the District Council's engineer under a penalty for delay. The Clerk to the Rural District Council, Rathdrum, Ireland.

IRELAND.—April 27.—For certain alterations to premises and the building of boundary walls to enclose premises recently acquired in Defender's Row, Mary Street South, and Shields' Yard, &c., for the Dundalk Urban District Council. The Town Surveyor's Office, Dundalk.

IRELAND.—May 3.—For the construction of an overline bridge and approaches at Finaghy, near Belfast, for the Great Northern Railway Co. (Ireland). Deposit £2 2*s.* The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

KELHAM.—May 3.—For residence, &c., to be built at Kelham, near Newark. Separate tenders are required—viz.: (1) builders' work; (2) plumbers' work. Messrs. Sheppard & Lockton, M.S.A., Licentiate R.I.B.A., architects and surveyors, Bargate, Newark.

LANCHESTER.—April 28.—For general repairs and painting inside and outside of the cottage homes, Lanchester, co. Durham, for the Lanchester Board of Guardians. Mr. G. Thomas Wilson, architect, 22 Durham Road, Blackhill, co. Durham.

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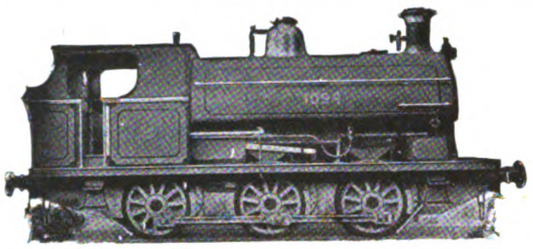
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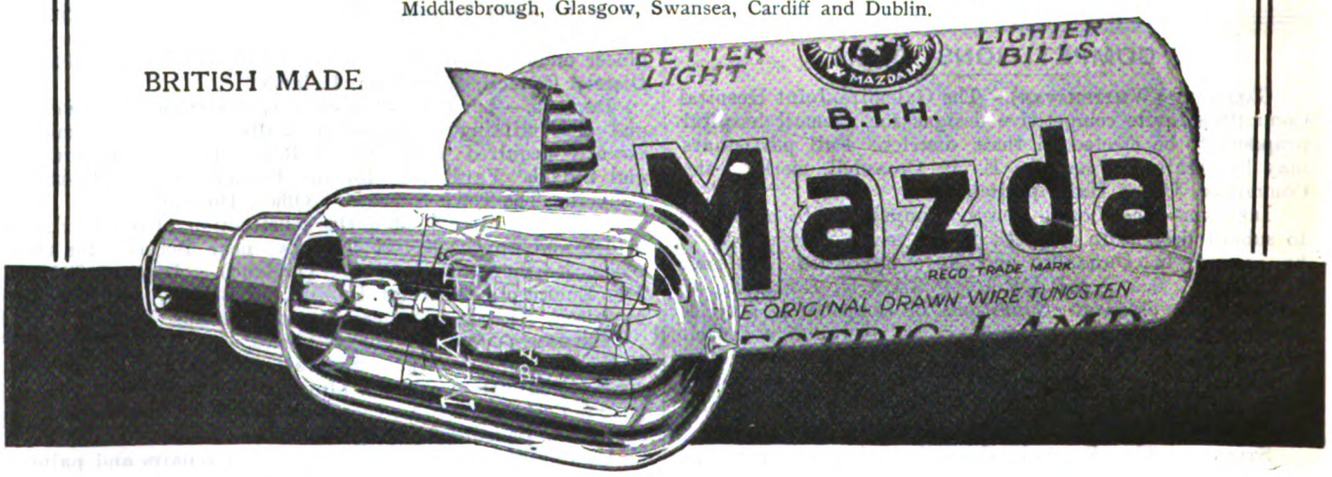
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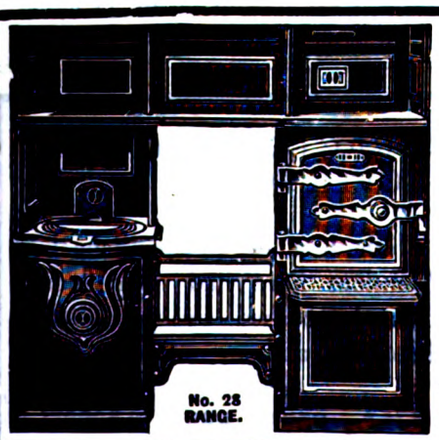
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LONDON.—May 10.—For the foundations and concrete retaining wall in connection with the new General Post Office East, London, E.C., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—May 11.—For steel constructional work in the extension of power house, for the St. Pancras Borough Council. Deposit £2 2s. Drawings may be inspected at 57 Pratt Street, Camden Town, N.W.

LYME REGIS.—April 24.—For erecting a retaining wall, buttresses and steps on the marine parade, for the Town Council. The Borough Surveyor's Office, Lyme Regis, Dorset.

MILNSBRIDGE.—April 30.—For the various works required in erection of 24 dwelling-houses, in five separate blocks, at Cowlersley, Milnsbridge (part of the Storth estate housing scheme, under the Housing of the Working-Classes Acts), for the Linthwaite Urban District Council. The mason's work will be for drainage and excavations for basements, and for labour only in walling "Winget" concrete blocks. Other trades as usual. Contractors are requested to tender for the works required for the 24 houses together, and also in blocks. Mr. J. Ainley, architect, Chapel Street, Slaithwaite.

NEWLYN (CORNWALL).—April 28.—For the construction of a reinforced-concrete face wall to part of the existing North Pier, Newlyn Harbour, for the Newlyn Pier and Harbour Commissioners. The length of pier to be faced is constructed in openwork reinforced concrete. Parties tendering are required to submit their own designs and calculations for the details of the construction. Deposit £1. The Clerk to the Commissioners, Public Buildings, Penzance, or Messrs. Douglass, Lewis & Douglass, the engineers to the Commissioners, 15 Victoria Street, Westminster, London, S.W.

NOTTINGHAM.—For erection of huts (War Office plan) at the Bagthorpe Infirmary. Mr. J. Allan Battersby, 50 Shakespeare Street, Nottingham.

PENGAM.—May 6.—For erection of a new Constitutional club at Twyn-y-ffald, Pengam, Mon., for the Twyn-y-ffald Constitutional Club Co., Ltd. Send applications and £2 2s. deposit by April 26 to Mr. D. J. Thomas, M.S.A., architect, Blackwood.

SALISBURY.—For repairs and painting to the Wesleyan church, school and class rooms, &c., Salisbury. Mr. F. Bath, architect, Salisbury.

SANDBACH.—May 6.—For erection of Primitive Methodist chapel and school at Malkin's Bank, near Sandbach. Messrs. Alfred Price & Sons, architects, Sandbach.

SCOTLAND.—April 28.—For the following works required in connection with the proposed erection of two tenements at the corner of Gallowgate and Moore Street—viz.: mason and brick works; (2) carpenter and joiner works; (3) slater work; (4) plumber work; (5) plaster work; (6) tile work; and (7) painter work—for the Glasgow Corporation. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—April 29.—For the wright and joiner works required in connection with the proposed erection of sanatorium and children's home at Southfield, near Mearns, for the Glasgow Corporation. Deposit £1 1s. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—May 1.—For the work to be executed in the construction of a reinforced-concrete pump chamber at the Eastern Wharf, Carolina Port, Dundee, for the Corporation. Mr. H. Richardson, M.I.E.E., general manager and engineer. Electricity Department, Dundee.

SUTTON-IN-ASHFIELD.—May 6.—For erection of a post office in Brook Street, for the Urban District Council. Deposit £2 2s. Mr. Walter Burn, A.M.I.C.E., surveyor to the Urban District Council, Sutton-in-Ashfield.

UXBRIDGE.—April 27.—For erection of a corrugated-iron bathing shed on land adjoining the river Frays, for the Urban District Council. Mr. W. L. Eves, F.S.I., surveyor, 54 High Street, Uxbridge, Middlesex.

WALES.—For carrying out repairs at the Rectory, Llanwrin, Merioneth. Mr. H. Hughes, architect, Diocesan Offices, Bangor.

WALES.—April 24.—For erection of premises at Ystradgynlais, Brecon, for Mr. E. E. Evans, Oxford House, Ystradgynlais. Deposit £1 1s. Mr. D. Morgan, architect and surveyor, Brynheulog, Gwaun-cae-Gurwen.

WEDNESBURY.—For erection of dispensary, Camp Hill Lane, Wednesbury, for the Staffordshire, Wolverhampton, and Dudley Joint Committee for Tuberculosis. Messrs. Scott & Clark, M.S.A., A.R.C.A., architects and surveyors, Regent Chambers, Wednesbury.

WHITBY.—May 8.—For the construction of a timber-framed lifeboat house covered with corrugated steel sheeting, a reinforced concrete sub-structure, slipway and approach thereto, near the Fish Pier, Whitby Harbour, in the County of Yorkshire, upon the foreshore and sea bed thereat, for the Royal National Lifeboat Institution. Deposit £1. Mr. John W. Foster, Local Hon. Secretary, Harbour Department, Urban District Council Offices, Whitby, or Messrs. Douglass, Lewis & Douglass, engineers and architects, 15 Victoria Street, Westminster, London, S.W.

TENDERS.

HOLBEACH.

For the erection of a pair of cottages on Greenfield Farm, near Saracen's Head, Boston Road, for Mr. W. Waite. Mr. F. BURDETT WARD, M.S.A., architect, Wisbech.

J. W. Darby	£470 0 0
Emery & Co.	451 6 8
Bateman & Son	450 0 0
J. PARSONS & SON, Holbeach (*accepted*)	395 0 0

INCE.

For the construction of sewers, drains and manholes, together with various tanks, engine house, percolating filters, 12-inch cast-iron pumping main, workman's cottage, and other works, for the Ince-in-Makerfield Urban District Council. Mr. A. T. SWAIN, engineer and surveyor, Ince, near Wigan.

Bentley	£13,550 0 0
Bickerstaff	13,072 0 0
Buckley	13,000 0 0
Smith Bros.	12,734 0 0
Binns	12,611 0 0
Jowitt	11,074 0 0
Bentley & Jubb	10,664 0 0
Clegg Bros.	10,575 0 0
Cowburn & Sons	10,555 0 0
J. & H. Houghton	10,461 0 0
WEBSTER & WINSTANLEY, Wigan (*accepted*)	10,283 0 0
Horrocks, Westhoughton	10.164 0 0

LEVERINGTON.

For the erection of a warehouse at Horseshoe Mills, Leverington, Wisbech, for Messrs. Smedley & Co. Mr. F. BURDETT WARD, M.S.A., architect, Wisbech.

Johnson & Son	£765 0 0
R. Shanks	760 0 0
Nelson & Register	741 18 0
Wilkinson & Co.	700 0 0
H. RANDS & SON, Wisbech (*accepted*)	675 0 0

OYSTERMOUTH.

For the erection of a new nave and chancel at All Saints' Church. Mr. L. W. BARNARD, architect, Cheltenham.

Walters & Son	£14,742 0 0
Cowlin & Sons	13,548 0 0
Morris	10,670 0 0
Lloyd Bros.	10,476 0 0
Bloxham	10,297 0 0
Pittard & Son	10,069 0 0
J. & F. Weaver	10,059 0 0
Bennett Bros.	9,633 0 0
Franklin, Ltd.	9,250 0 0
Collins & Godfrey	8,976 0 0
THOMPSON & CO., Peterborough (*accepted*)	8,889 0 0
Long & Sons	8,888 0 0

SCOTLAND.

For the various works required in the extension of the Annan Hospital, for the District Committee.

Accepted tenders.

G. M'Ildowie, Annan, mason	£481 0 0
J. S. Irvine, Annan, joiner	264 3 2
P. Drummond & Son, Dumfries, plumbers	220 14 2
W. Thomson, Annan, plasterer	85 16 9
J. Richardson, slater	51 1 6
J. M'Culloch, Annan, painter	32 2 2

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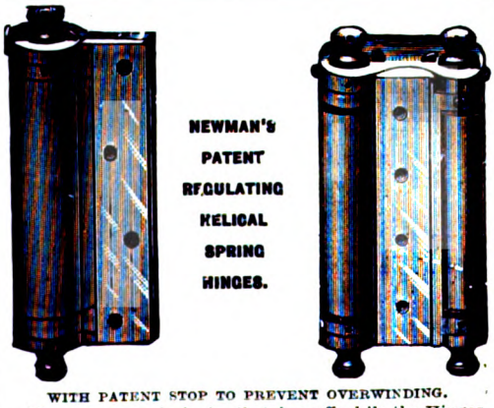
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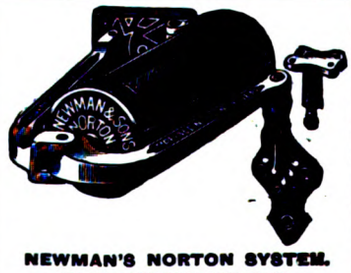
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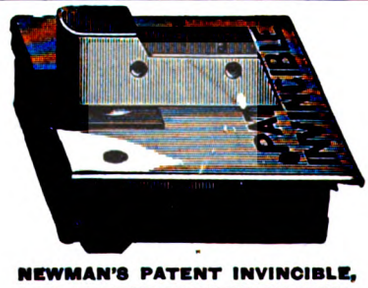
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TRURO.

For the construction of new clock turret in steel and concrete, new ceilings in Council chamber and adjoining rooms, new mayor's parlour, muniment room, and store room at the municipal buildings, for the Town Council. Mr. F. A. Barnes, A.M.I.C.E., City surveyor.

Thomas & Sons	£1,066	0	0
W. Nicholls	859	0	0
T. P. Clare	837	0	0
C. & J. Harris, Kenwyn Street, Truro (*accepted*)	766	0	0

ROYAL SCOTTISH ACADEMY BELGIAN ARTISTS' RELIEF FUND.

The accounts in connection with the efforts recently made by the Academy to assist their Belgian brother artists who are suffering from the effects of the war having now been adjusted and finally wound up, the Council are able to submit, for the information of the public interested in the scheme, the annexed statement of the financial results:—

It will be remembered that the fund was raised from two main sources—viz. the exhibition of 150 pictures contributed by Scottish artists, which were disposed of by an Art Union scheme specially sanctioned by the Board of Trade, and donations by members of the Academy and a few friends specially interested in the matter.

Statement.

Sums received in payment of 150 Art Union vouchers, admissions to exhibition, &c.	£807	2	10
Donations to the fund	724	8	0
	£1,531	10	10
Less total expenses	67	1	11
	£1,464	8	11

On the advice of the Comte de Lalaing, ex-Belgian Minister, who was personally consulted by Sir James Guthrie, the above sum, minus two small grants already made in cases which had come to the cognisance of the Academy, was handed over to M. Lambotte, Director of the Fine Arts in Belgium, for distribution.

M. Lambotte, who is at present resident in London, in gratefully acknowledging receipt of the money, says:—

"I have sent to Brussels, to the official committee of aid for artists, a first sum of £400, which will be distributed conformably to your indications. . . . I shall soon send another sum to Belgium, but I wish to make the previous remittance last as long as possible.

"Ultimately I shall publish a letter bearing witness to the brotherly kindness of the Scottish artists.

"It is necessary that each one should know the debt of gratitude which we have thus contracted."

The Dunfermline District Committee have just let the contract for the construction of a new reservoir at Glendevon to Messrs. P. & W. Anderson, contractors, Glasgow. The contract price for the work, which also includes the formation of a road of access and the erection of the necessary fencing, is £97,000. The engineers are Messrs. Warren & Stewart, of Glasgow.

We have just received the twenty-ninth annual issue of "The Mercantile Year-book and Directory of Importers." No firm who are carrying on an export trade can afford to be without this work, which is undoubtedly the standard export publication. The Editor, Mr. Lindley-Jones, in his preface, explains the great difficulty caused by the war, the very large number of names of importers who have been represented hitherto by German and Austrian firms, whose names have had to be left out; despite this fact, 800 new names have been added to the list of oversea buyers in Part II., which provides the names of an incredible number of importers in upwards of 1,100 business centres throughout the world. The very greatest care has been taken that this issue shall be as correct as usual, although it can readily be understood that only by a perfectly organised staff would it have been possible to produce this year an issue in every way the equal of the twenty-eight annual issues which have previously been published. The publication is issued at a charge of 10*s.* net by Messrs. Lindley-Jones & Brother, of 16 St. Helen's Place, London, E.C.

CRYSTAL PALACE ENGINEERING SCHOOL.

On Thursday, April 15, the certificates gained during the Easter Term by the students of the Crystal Palace School of Practical Engineering were distributed by Sir John Jackson, M.P., who was supported by Sir David Burnett, Bart. (Chairman of the Trustees of the Crystal Palace), Mr. Edward Smith, J.P. (Trustee), Mr. J. W. Wilson (Principal of the school), Mr. Maurice Wilson (Vice-Principal), Mr. Alfred Pearce, Mr. A. T. Bean (Examiners), and Mr. J. E. Wright Robinson (Clerk to the Trustees).

Sir John Jackson congratulated the School on having maintained its good old reputation. It appeared to him a great advantage to have, as they had there, a Principal and Vice-Principal who had been in practice as engineers rather than men who had had a purely college education. It was not only theory which was required to make an engineer, and at that school they had both a theoretical and practical education. Many of the students would soon be going out into the world, and he urged them to always be very careful in regard to drawing up specifications and the conditions imposed upon contractors, and to always be practical. They all hoped to see the end of the war, and when that day came he thought there would be great engineering works to go forward. There would be great military engineering undertakings, and particularly, he thought, with regard to ocean carriage, big ships, and so forth. Much work must come in the future for engineers, particularly abroad. Years ago all the big works abroad were engineered by Englishmen. To-day they had the competition of French, German, and Russian engineers, some very able men indeed. The young English engineer must fit himself to meet this competition. It was not always the man of genius who succeeded. It was more often the one who was not downhearted at finding others at the top of the prize-list and who went on honestly and steadily, determined to get on. Speaking of big engineering works, Sir John said his firm had recently completed a large railway in Chili. The Euphrates-Tigris irrigation scheme was one that would cost 16 or 18 millions. A survey had just been completed for a big railway in Russia, which would run into over twenty millions. He believed some day they would have either a bridge across or tunnel from Dover to Calais. The plans were made for the bridge some years ago, and he sometimes looked at the drawings in his office. The cost would be great, but so far as he could see there were no insuperable difficulties, and he was prepared to take the contract for the English half. In concluding his advice to the students, Sir John spoke of the necessity for plodding, careful work. Character was of the utmost importance, and they must always have the greatest possible respect for truth. Whatever they did, he urged them to always consider the question of character first far more than any consideration of money or position.

The death of Mr. George Holme, a freeman of Liverpool, occurred on Saturday last at his residence, Plas Trevor, Llandudno. Mr. Holme was in his ninety-third year, and came of a family which had been identified with Liverpool public life for about a century. He was an architect by profession, and among the important buildings in Liverpool which he designed and erected, in conjunction with his nephew, the late Mr. Frank Holme, are the Conservative Club in Dale Street and the County Sessions House in Islington. For many years he held the office of bridgemaster and surveyor to the West Derby Hundred. He lived at Moor Hall, Aughton, until his retirement about twelve years ago, when he went to reside at Llandudno.

The annual meeting of Cardiff and District Builders' Association was held on Friday last. Mr. Charles Hoare presided. The accounts showed a substantial balance. The following officers were elected: President, Mr. George Burgess; Vice-President, Mr. Henry Jones; Treasurer, Mr. W. E. Kerslake; Auditor, Mr. H. B. Tucker. The report noted with gratification the concessions made to the builders by Lord Bute. About twelve months ago the builders presented a petition to Lord Bute appealing for concessions in view of the increasing obligations placed upon them by recent legislation, municipal restrictions, and increased cost of production. It is intended to approach the other ground landlords on the same points. A vote of thanks was accorded to Mr. Charles Hoare for the valuable services rendered by him as president and vice-president since the formation of the Association.

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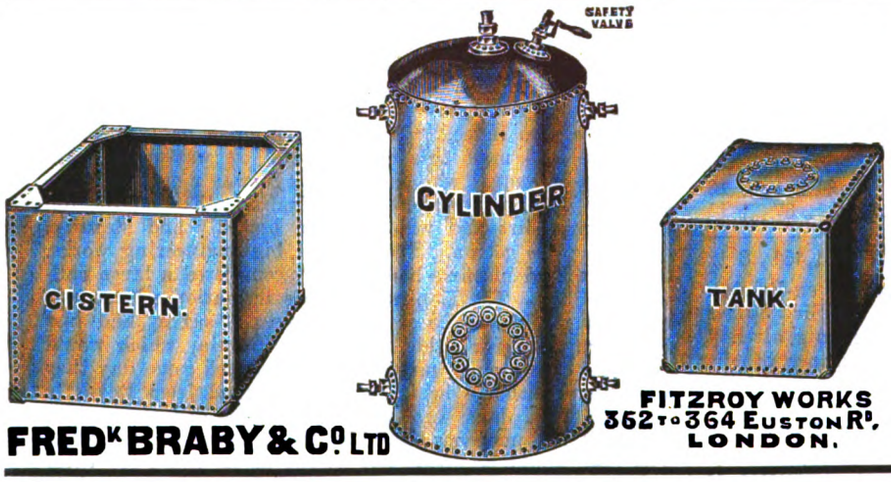
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THE "SIMPLEX" CHEMICAL FIRE EXTINGUISHER.

Probably few of the many varieties of chemical fire extinguisher before the public can claim much conformity with the rules laid down for these appliances by the Fire Office and British Fire Prevention Committees. Failure to withstand pressure at the moment of operation through choking, the effects of rust and corrosion, or inherent weakness of construction is the common drawback. As there is no doubt that these small hand fire engines, when properly designed and constructed, can often prove of enormous value, it is a matter for congratulation that Messrs. Mather & Platt, Ltd., of Park Works, Manchester, have devoted their attention to them, and have produced an appliance that can be depended on under all conditions.

The form of "Simplex" extincteur now made by Messrs. Mather & Platt, Ltd., has been specially designed to meet the requirements of the British Government, who have placed an order with the firm which is believed to be the largest ever given for fire extincteurs in this or any other country. The type of extincteur which Messrs. Mather & Platt are now putting on the market is identical with the Government appliance in every detail with the sole exception of the Royal cipher.

The "Simplex" extincteur depends for its operation on the reaction of sulphuric acid upon a bi-carbonate of soda solution. The acid is contained in a hermetically



sealed bottle suspended over the liquid, which is discharged through the jet upon smashing the bottle by striking a knob at the top of the extincteur. The fluid, which has great extinguishing power, is ejected to a distance of 50 to 60 feet.

In this appliance there are no valves or rubber hose, whilst the jet orifice is protected from glass splinters or other foreign material by a cone-shaped sieve. An opening at the top 3 inches in diameter is provided, through which the acid bottle can be withdrawn should it be desired to examine the interior.

The body of the extincteur is constructed of 16s S.W.G. steel and tested hydraulically to a pressure of 350 pounds. It is coated thickly with lead in the centre and with tin at the top and bottom, both inside and outside, to prevent corrosion, and every seam is riveted as well as soldered. After testing the extincteur is handsomely enamelled, the brass parts highly polished and then lacquered. The chemicals with which the machine is charged undergo no change, and the extincteur will operate as satisfactorily after ten years as on the day on which it was first charged.

A special wall bracket has been designed by which the extincteur is retained in a convenient position for use. In one form this bracket holds the extincteur on the lid of a metal box containing new charges, and a brass pin, which must be withdrawn before the appliance can be operated, keeps it safe from any risk of accidental discharge.

Messrs. Mather & Platt have just issued a catalogue relating to their fire extincteurs; copies can be had on application.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 29,614. Dec. 23, 1913.—Dated under International Convention, Dec. 30, 1912. L. Petersen-Hviid, Kastrup by Copenhagen, Amager, Denmark. Method of dyeing, impregnating or softening wood at high temperature, and to prevent the destruction of the wood during such process.

4,017. Feb. 16, 1914.—J. R. Quain, 17 Victoria Street, S.W. Electric heaters.

6,158. March 11, 1914.—Thomas Areson, 701 East 163rd Street, Bronx, N.Y. Fire extinguishers.

6,751. March 17, 1914.—Samuel Davidson, 40 Vernon Place, Buffalo, N.Y., J. B. Shantz, 128 Fargo Avenue, Buffalo, and J. W. Ellis, 48 Dorchester Road, Buffalo, N.Y. Manufacture of artificial stone, tiles, and the like, moulded ceramic, and similar products.

7,551. March 25, 1914.—R. H. Adams, 20 St. Margaret's Road, Manor Park, E. Checking appliances for use with door springs.

7,599. March 26, 1914.—E. C. Paskell, 31 Colmore Row, Birmingham. Apparatus for cleaning by vacuum.

7,614. March 26, 1914.— Ben Morton, 78 Quay Street, Deansgate, Manchester. Reinforced brickwork, columns, piers, and the like.

7,918. March 28, 1914.—A. A. Pauly, 935 Poland Avenue, Youngstown, Mahoning, Ohio, U.S.A. Fireproof floors, roofs, and the like.

8,697. April 6, 1914.—Dated under International Convention, April 16, 1913.—Erik Madsen, 1 Torvet, Hillerod, Denmark. Flushing tanks for water closets.

8,808. April 7, 1914.—W. C. Rees, 183 Willow Avenue, West Somerville, Middlesex, Mass., U.S.A. Closet seats and guards therefor.

8,900. April 8, 1914.—J. E. Webb, 11 Poultry, E.C. Hand fire extinguishers.

9,213. April 14, 1914, and 1376. April 14, 1914.—J. T. Negus and Louise Negus, 3 Avenue Mansions, Eastbourne. Electric cooking ovens.

10,297. April 24, 1914.—T. J. Roussel, Wentworth, Ontario, Canada. Weatherproof windows.

10,409. April 27, 1914.—Alfred Woolnough, Ernest Mayne, and Bert Byford, 40 Dowling Street, Dunedin, N.Z. Hinges for metal casements.

11,614. May 11, 1914.—R. A. McQuitty, 10 Parsons Green, S.W. Ornamenting processes.

12,927. May 26, 1914.—P. H. Trout, Mount Vernon, Westchester, N.Y. Concrete tile making machine.

14,458. June 16, 1914. J. W. Hughes, 302 Grayling Avenue, Narbeth, Montgomery, Penn, U.S.A. Furnaces for use in the manufacture of artificial stone.

14,592. June 17, 1914.—G. A. Fair, 2265 Beachwood Avenue, Los Angeles, California. Sash controlled ventilating window or door.

18,327. Aug. 7, 1914.—W. A. Green, M.A., 27a Elsham Road, Kensington. Drawing curves.

19,802. Sept. 15, 1914.—R. C. Spencer, 1446 Otis Building, Chicago, Ill, U.S.A., Architect. Casement window adjusters.

20,866. Oct. 12, 1914.—D. A. McCoy, of Hand, South Dakota, U.S.A. Fire escapes.

24,210. Dec. 17, 1914.—Falkirk Iron Co., Ltd., and Walter Muirhead, of Falkirk Iron Works, Falkirk. Combined cooking and heating stoves.

24,527. Dec. 23, 1914.—G. C. Sykes, Alberta Cottage, Wigginton, Tring, Hertford. Means for securing shelves and the like in position.

767. Jan. 18, 1915.—Dated under International Convention, Jan. 23, 1914.—H. P. McColl, 402 Post Office Place, Melbourne. Door lock and contact for electric elevators.

Any of the above specifications may be obtained from J. D. Roots & Co.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 3,897, Feb. 14, 1914. Domestic fire grates. L. G. J. Bratt, 3 York Road, West Norwood, and J. A. Getty, 64a Stondon Park, Honor Oak, London.—This invention has for its object to convert fire grates having the usual front bars

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into grates of the barless type by removing the front bars and attaching to the existing grate bottom an extension grating, and consists of an adaptable grate bottom adjustable so as to be capable of attachment to any existing grate bottom. The grate extension comprises a cast or wrought iron front, to which is pivoted on a horizontal spindle a

Fig. 1.

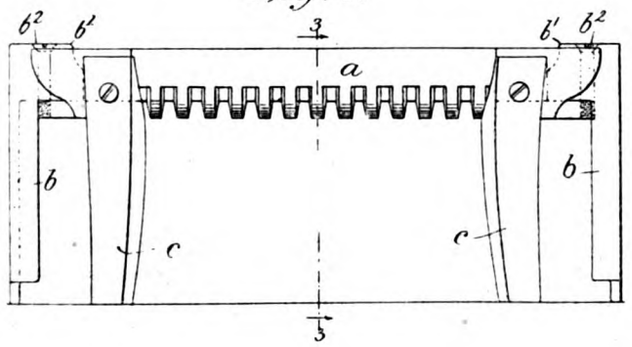
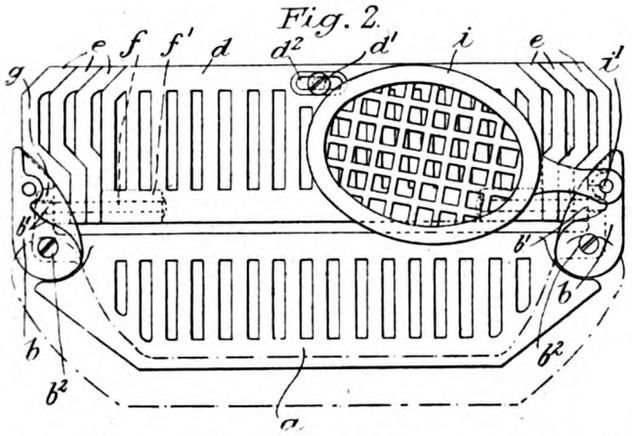


Fig. 2.



loose grating and a number of single bars, half being arranged to the right of and half to the left of the loose grating in such a manner that the extension may be readily applied to existing grates of varying widths by including with the loose grating as many of the single bars as re-

Fig. 3

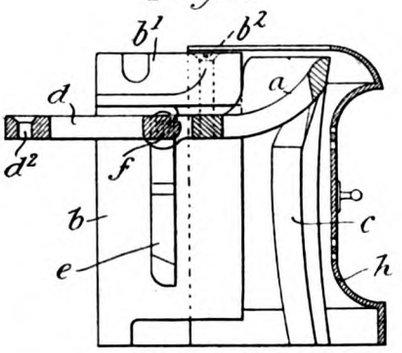
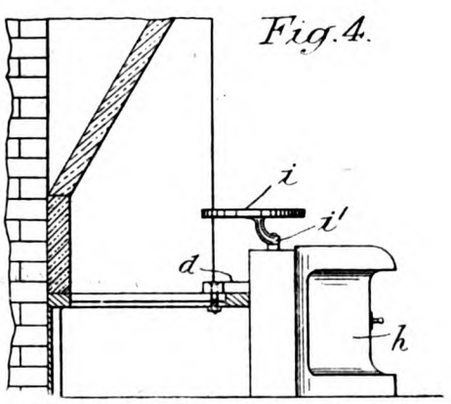


Fig. 4.



quired. Fig. 1 is a front elevation with the fret removed, and fig. 2 a plan with one trivet in position. Fig. 3 is a transverse section taken on the line 3-3 in fig. 1, and fig. 4 is a side elevation partly in section, showing the extension applied to a grate. The grate extension comprises a cast or wrought iron front (*a*), which is supported on two pivoted side wings (*b*) and a pair of legs (*c*). Each wing (*b*) is formed of a thin curved casting with a web (b^1) at the top, through which a screw (b^2) is passed to adjustably connect the wing to the front (*a*). The loose grating (*d*), together with the single bars (*e*), are pivotally arranged on short spindle (*f*), set in sockets (f^1) on the grating (*d*), and turning in a pair of lugs (*g*) formed integral with the front (*a*). The grate extension is arranged in front of the original grate bottom, as seen in fig. 4, and the hinged grating (*d*), and one, two, or three of the single bars (*e*) each side are arranged to rest on the existing grate bottom. The side wings (*b*) are then adjusted, and the grate extension secured by a bolt (d^1), which is passed through an elongated slot (d^2) in the hinged grating, and also through one of the slots in the original grate bottom. A removable fret (*h*) is provided to close in at the front, the space below the grate bottom and one or two trivets (*i*) having vertical pivot pins (i^1) adapted to engage in sockets in the wings (*b*) are also provided. March 3, 1915.

VARIETIES.

A PRIVATE temporary hospital for 100 wounded soldiers is to be erected at Stratford-on-Avon at a cost, including equipment, of £6,000, which is being raised by voluntary effort.

IT is reported that a Leicester firm propose to establish branch dye works in Nuneaton, and that a firm of needle manufacturers, of Hinckley, have decided to build a factory in the borough, which will give employment to about 300 people.

THE Council of the Society of Architects have, at the invitation of the National Housing and Town Planning Council, appointed delegates to attend a series of conferences which are being held in London on April 20 and 21; Edinburgh, April 27 and 28; Liverpool, May 12 and 13; and Leeds, May 19 and 20.

THE Forden (Montgomeryshire) Rural District Council were asked at their last week's meeting by the Welsh Housing Pioneer Association, through its architect, Mr. Hancocks, to undertake a water supply to a garden village in connection with the development of the Criggion granite quarries. It was proposed to erect forty-seven houses with baths at rents of 4*s.* to 4*s.* 6*d.* a week. Mr. Hancocks pressed for an early decision by the Council, but they adjourned consideration for a month.

A NEW school is to be erected at Barclay Street, Cowdenbeath, by Beath School Board, at an approximate cost of £10,000. It will consist of fifteen class-rooms on one single floor, giving accommodation for 750 pupils, with a drill hall entirely separate, measuring 50 ft. by 26 ft. Provision is made for medical inspection and ablution rooms. The buildings are to be of brick and lime, with stone dressings. The architect is Mr. G. Charles Campbell, Methil.

TRADE NOTES.

ON the flat roofs for the factories of a large glass manufacturer at Rotherham, the architect specified a waterproofed concrete as a finishing coat. We understand that the work is very satisfactory. The makers of the waterproofing powder Pudlo, which was used for this work, state that some important contracts are being roofed with waterproofed concrete. The West Riding County Council specified the powder Pudlo for rough-casting the Bradley new schools.

THE military hospital at Northampton, the Montagu Hospital at Mexborough, and the Howden Isolation Hospital are being supplied with Shorland's warm air-ventilating patent Manchester stoves by Messrs. Shorland & Brother, Ltd., of Failsworth, Manchester. The Metalurgical College, Cardiff, is being supplied with Shorland's patent exhaust roof ventilators. The new Workhouse Infirmary, Brigg, Lincs., is being supplied with double-fronted patent Manchester stoves with descending smoke flues, patent Manchester grates, and special ventilators by Messrs. Shorland. The Grosvenor Picture Theatre, Manchester, is nearing completion, and complete systems of heating and mechanical ventilation are being installed by Messrs. E. H. Shorland & Brother, Ltd., Manchester, the ventilating system providing for frequent changes of air per hour.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, May 3.

Royal Institute of British Architects: Eighty-first annual general meeting, at 8 P.M.

Tuesday, May 4.

Society for Promotion of Roman Studies: Annual general meeting, to be followed by a Paper on "Roman Conceptions of Empire," by Professor F. Haverfield, in the apartments of the Society of Antiquaries, Burlington House, at 4.30 P.M.

Wednesday, May 5.

Royal Archæological Institute: Paper entitled "Some New Light on Roman Roads in Sussex," by Mr. A. Hadrial Allcroft, M.A., in the apartments of the Society of Antiquaries, Burlington House, at 4.30 P.M.

Royal Society of Arts: Paper entitled "On the Measurement of the Efficiency of Domestic Fires, and on a Simple and Smokeless Grate," by Dr. A. Vernon Harcourt, D.C.L., LL.D., D.Sc., F.R.S. at 8 P.M.

Institute of Sanitary Engineers: Paper entitled "Asphalte and its Application in Sanitary Work," by Mr. Nandy Hoskins, at 8 P.M.

Thursday, May 6.

Concrete Institute: Sixth annual general meeting, to be followed by the resumed discussion on Mr. Osborn C. Hills's paper entitled "The London Building Acts, with some Suggested Amendments," at 7.30 P.M.

"DELIVER THE GOODS."

NOT only with regard to munitions of war but in respect of the commodities of peace, the obligation to "deliver the goods" is one of the most pressing throughout our national life. In warlike material the obligation rests for fulfilment principally, it would seem, upon the producers, but with peaceful material, the delivery of goods is chiefly affected at the present time by the inefficiency of transporters. Over and over again we have heard of late from manufacturers and merchants that their business is hampered by delays in delivery, both of material they require and of goods that are ready for despatch or which have been despatched.

We are now finding how much our national prosperity has been jeopardised by putting all our eggs in one basket and relying almost entirely upon the services of the railways for the conveyance of goods. Our canals have not only not been developed to cope with our increasing extension of manufacturing industry, but have been neglected, cramped, and throttled in favour of and to a large extent by the direct agency of our railway companies. They are derelict, like the Basingstoke Canal, or incapacitated by wilful destruction, like the short cut from the Thames at Gravesend to the Medway at Strood.

Road traffic of goods has practically ceased to exist, save for a few antiquated and superannuated carriers' carts, which are more of an antiquarian curiosity to-day than a positive factor of inland trade. Motor-driven vehicles have hardly as yet come into their own, great as are the possibilities that we see in this direction. Therefore we now have given a virtual monopoly of goods traffic to the railways. And it is of the present ineffective service of the railways that our manufacturers and merchants are complaining.

An excuse, of course, is ready, that the railways have been commandeered by the Government, and that the requirements of the Government have to be first met for conveyance of both men and material, at any cost of delay or inconvenience to other customers. The validity of the excuse must, no doubt, be admitted. We are all prepared to suffer inconvenience and loss if by that suffering the successful prosecution of the war can be in the slightest degree advanced. But, as is often the case with valid excuses, the present one is most probably—in fact almost certainly—made to cover more preventible inefficiency than it should. We must admit also that the railway companies have suffered, like many other large employers of labour, by a depletion of their personnel through the calls of recruiting for the Colours. When we hear, as we have heard, of goods that have been accepted for conveyance by a railway company undelivered for several weeks, and of which, after repeated inquiry by the consignors, all trace has been lost until persistent worrying has elicited the fact that the trucks were side-tracked within thirty or forty miles of their destination, it is impossible to avoid the conclusion that there has been avoidable inefficiency.

It is conceivable that the troubles from which consignors and consignees are suffering are not altogether unconnected with an *arrière-pensée* on the part of the railway companies and their managers. Nationalisation of our railways is a policy that is not without a considerable number of strenuous advocates. The present control of our railways by the Government is, in effect, a measure of nationalisation, and it is conceivable that, if we found, by experience during that control, that our railway service were bettered, or even if it were as good as before the war, the advocates of nationalisation would have a strong trump card in their hand. But if, on the other hand, the maximum of inconvenience is inflicted on traders and travellers, the railway chiefs may very well say—You have had nationalisation during the war; how do you like it?

The service of our railways before the war has been far from ideal, particularly with regard to the interests of traders. Over and over again our manufacturers have found themselves hopelessly handicapped in competition with foreigners by the heavy burden of railway rates for goods traffic, and even the advantage of quick delivery has often been reduced to a minimum by apparently unnecessary delay. It is a common experience with all of us, particularly in the neighbourhood of London and other large towns, to see great lengths of goods trains, packed with commodities, lying idle on sidings. This must spell inefficiency. It means not only delay in delivery of goods; it shows also the existence of a large amount of capital in rolling stock unemployed, and, consequently, raising freights to an unnecessary figure, for interest must be paid somehow on idle capital, and the trucks that are running have to pay that on those that are resting, as well as their own share.

How different is the experience, we will not say of Germans, but of our own kinsfolk in Australia, where the whole railway system is nationalised! The farmer who is 500 miles from his market can send his produce to the city at the same rate as his competitor who is only five miles away. He can himself travel free, once a month, the 500 miles to his market to do his business. One object of this arrangement is, of course, the opening up of back land in the interest of the State; but would not a similar policy here tend to reduce congestion around

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our great centres, and could not an enlightened tariff put our British manufacturer on a more equal footing with his continental competitor?

Better organisation would, we are sure, enable our railway companies even in these times of stress to deliver the goods more certainly and more rapidly than they are now doing. Though we cannot expect "business as usual," we can and ought to see that all business, and there is plenty about, should be hampered as little as possible. By all means give first place to the bullets of lead and nickel, but, as the Chancellor of the Exchequer has very truly told us, the issue of this war depends also largely upon the "silver bullet," and if our traders are prevented unduly from making the silver bullets we must suffer from it.

The ramifications of our national life are so closely interwoven that it is not only the inability of our peaceful trade to make the silver bullet that counts. The requirements of our armament workers are so wide that the apparently peaceful manufactures are essential to their productive capacity. They want more factories, more machines, more material, more food, more clothes. There is scarcely a branch of our national activities that does not require every possible assistance in speeding up and the removal of the slightest hampering influence, in order that the fullest activity may be maintained in the manufacture of the actual munitions of war.

There is no need for our railway managers to sit down with folded hands and sigh because they have not got the men. There is plenty of work in the running of a railway that can be done by women. We can all see for ourselves any day some of that work. Why, too, should not our English railways adopt the system, prevalent all over the Continent, of running mixed trains of passengers and goods? Better management would reduce the number of empty or half-empty passenger coaches that are now making useless loads for engines, and their place could be taken by goods trucks that would pay their way and make an immense difference in the ability of our traffic managers to deliver the goods.

NOTES AND COMMENTS.

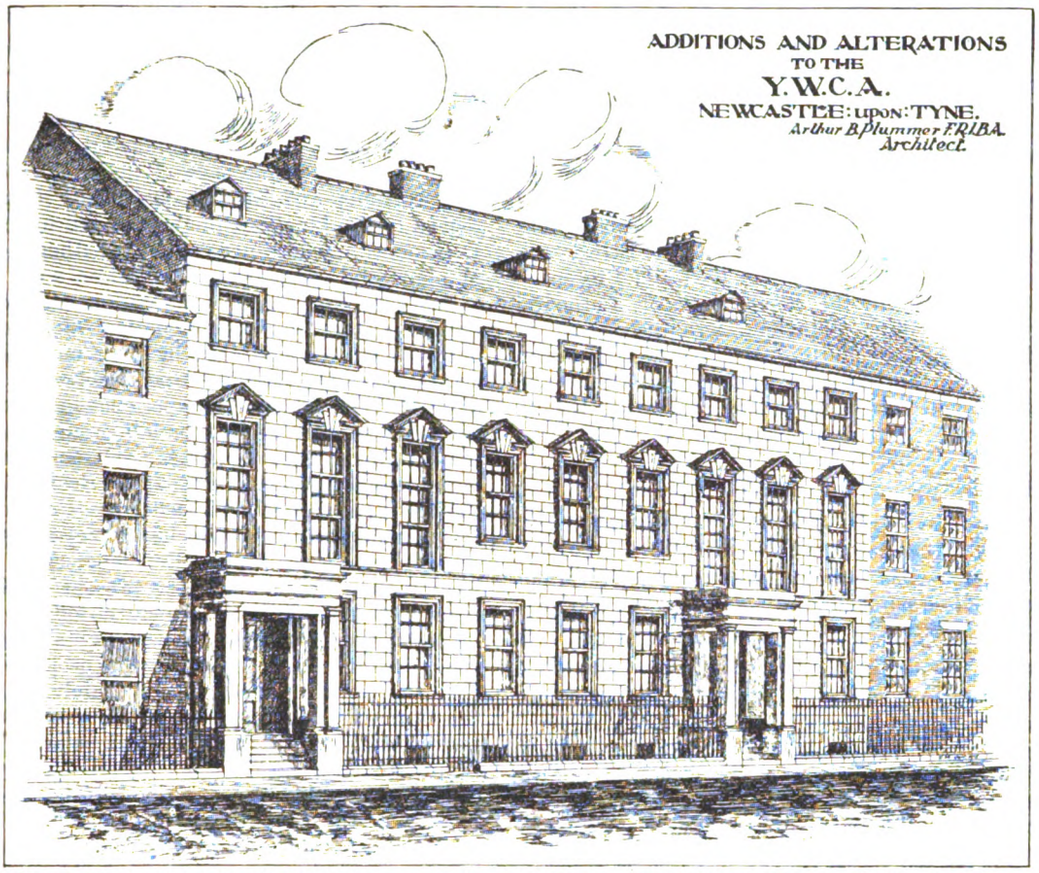
WE have no doubt that the "patriotic pledge" which has been set on foot by the *Daily Telegraph*, by which employers of labour undertake "to give preference in filling up positions after the war to those who have served their country under arms or in making munitions of war," will appeal to many of our readers, for the architectural profession, as a whole, has given generously of its younger members to the Colours, and even of men too old for Kitchener's army not a few will be found enrolled in the Anti-aircraft service and other branches where the limit of age is not so strict. Indeed, a story told us by one of our architect friends points a moral which young men in our profession may seriously consider. A would-be assistant came to this architect for a vacant berth; his draughtsmanship and other qualifications were satisfactory; his age was between twenty and twenty-one years. Asked why he had not joined the Army, his reply was "I didn't care to." As our friend's partner is serving with the Colours the young man was promptly told that there was no room in that office for anyone who could join the Army and "didn't care to." The pledge proposed by the *Daily Telegraph* is, perhaps, in one respect too sweeping. It prejudices those who, on account of age or other valid cause, could not, however much they desired it, join the militant forces of His Majesty, or even make munitions of war.

The influence of arterial roads upon town planning is so obvious that one cannot be surprised at the report of the Building Acts Committee of the London County Council on the question of a conference of local authorities in the neighbourhood of London. The lay-out of arterial roads must take into consideration other elements than those determining the town planning of even so large an area as Greater London, and therefore schemes for this area may be completely upset if they are evolved without reference to the roads. The report of the Building Acts Committee says: "We have had under consideration the resolution of the Council on December 22, 1914, as follows—That it be referred to the Building Acts Committee to report as to the advisability of the Council calling a conference of the local authorities in the neighbourhood of London to discuss joint action in town planning under Part II. of the Housing, Town Planning, &c., Act, 1909. In connection with the proposal contained in this resolution, we would remind the Council that the President of the Local Government Board has summoned six sectional conferences, each to consider the question of arterial roads and relationship of these roads to town planning, so far as concerns the six sections into which for the purpose Greater London has been divided. One hundred and thirty-seven authorities in Greater London are represented at these conferences. The conferences have met and sub-committees have been appointed to collect information, but no definite decisions have been arrived at. The question of town planning is so intimately associated with the question of arterial roads that it appears to us that no useful purpose would be served in calling a conference to discuss the question of town planning until some definite decisions have been arrived at with regard to the question of providing arterial roads, or at least until some further progress has been made in that direction. There is also the financial aspect of the proposal to be considered. If the Council were to call a conference as suggested it must be assumed that the Council would be prepared to meet any expenditure which might have to be incurred in connection with any schemes for dealing with areas in London which might be put forward as the result of such conference. We believe, however, that the Council does not wish at the present time to do anything in furtherance of schemes which may possibly involve the Council and other authorities in heavy expenditure. We recommend—That the reference of December 22, 1914, to the Building Acts Committee to report as to the advisability of calling a conference to discuss joint action in town planning be discharged."

At a conference of representatives of local authorities of Greater London, Middlesex, Hertfordshire, Kent, and Surrey, organised to consider the preparation of town-planning schemes and questions relating to the rate of interest for housing loans and the cost of building during the war, held last week, the scheme of assisting architects, surveyors, and others who have lost their incomes through the war was discussed. The Professional Classes Sub-Committee of the Government Committee on the Prevention and Relief of Distress had received a memorial from representatives of the Royal Institute of British Architects, the Architects' War Committee, the Architects' Benevolent Society, the Surveyors' Institution, the Professional Classes War Relief Council, the National Housing and Town Planning Council, the Town Planning Institute, the London Society, and the Garden Cities and Town Planning Association, advocating a scheme of civic surveys in various parts of the country. It was urged that the scheme, which would be of great service to the community, would employ the energies of professional men who had lost their work owing to the war. The scheme had been before a Government Committee, which had recommended it to the Prince of Wales's Fund. The Government Committee was prepared to pay up to £2 a week to the men who would be employed on the scheme.

The delegates from Barking and Tottenham maintained that the working classes would object to money being taken from the Prince of Wales's Fund for such a purpose. Other delegates pointed out that the Fund was contributed to by professional men throughout the country, and that the money could be rightly used to help members of the professional classes. Moreover,

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The Y.W.C.A., Newcastle, is being extended by the removal of a house on its west side, and the new building, with a new front to the whole, includes this extension. In the rear there is a large meeting hall and upwards of forty additional bedrooms with new class rooms, lounge, dining room, kitchen, bath rooms, &c.

the Government had appointed a Committee of the Cabinet to consider the question of dealing with unemployment among professional people, and it had decided that the Prince of Wales's Fund was available for that purpose. The Chairman remarked that the conference was not concerned with the question of the men employed on the civic survey being paid out of the Prince of Wales's Fund. It was sufficient that the work was going to be much better done with the assistance of the Local Authorities and would prove of great value in preparing town planning schemes.

The following resolution was carried: "That this conference of Local Authorities approving the proposal that a series of plans and diagrams showing in a graphic form the problems of the Greater London area should be prepared in accordance with the proposal placed before the Government Committee, and in order to assist in the work approves of the formation of a Committee of representatives of each Local Authority represented at the conference with other representatives to be nominated by the Local Authorities not represented, to act as an Advisory Committee with regard to the work."

At the same conference cottage building during the period of the war and at the close of the war was discussed. In a memorandum prepared by Mr. Aldridge it was estimated that to meet the normal needs of the country, to keep pace with the growth of population, and to make up the deficit caused by the destruction of unfit houses at least 80,000 cottages should be built every year. Two proposals were put forward: (1) That the State should lend money to Public Utility Societies up to 90 per cent. of the amount needed and for a period of sixty years; (2) that when land has been made the subject of town planning schemes, when the scale of rents to be charged is a moderate one, when the quality of building is properly supervised, and when the action taken has the approval of the local authority of the district, the provision contained in the Act of 1890 as to the lending of money by the State to private enterprise shall be revised and two-thirds of the cost of building advanced.

Several speakers complained that the "rings" which increased the prices of building materials interfered with cottage building, and it was suggested that a strong resolution should be sent to the Government to stop rings since they were putting up the price of workmen's dwellings from 10 to 20 per cent.

Speaking on the financial aspect of rural planning Mr. Harold Shawcross (Chairman of the National Housing Council) said he did not think they ought to cavil with the Government for saying that it needed all its financial resources for carrying on the war successfully. They wanted some definite statement from the Government as to how capital for building houses in the future was to be found. He thought they should try and press upon the Government to set aside ten millions, to be lent at a certain rate of interest, and the money to be open to any local authorities which came forward with reasonable schemes which received the approval of the Local Government Board. If a high rate of interest were fixed, there ought to be some provision that if the rate decreased the local authority should be able to borrow the money at the lower rate, and wipe out the higher loan.

At a meeting of the Old Glasgow Club held in the Trades Hall a lecture was given by Mr. Thomas Lugton on "The Ancient Town Site of Glasgow and Early Church Builders." The lecturer stated that in 1810 a booklet entitled "Improvements in the City" was published in Glasgow, written by David Laurie, after whom Laurieston was named. The writer's principal scheme was to establish a market for beef, meal, grain, and vegetables on the south side of the river between Buchan Street and Nicholson Street. In his opinion that site was the best, chiefly on account of the roads from Rutherglen, Pollokshaws, Paisley, Ayr, Greenock, and Kilmarnock terminating at the south end of Stockwell Bridge, the first stone bridge of Glasgow. Long before David Laurie's day great roads ended at a point further east, opposite Point Isle in the Clyde, between Nelson's Monument and the Weir. Point Isle might

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have been the centre foundation for Harry the Minstrel's "brig o' trie," Glasgow's first timber bridge. From Point Isle on the north bank an ancient path at one time led across the undulating and in parts marshy surface of Glasgow Green straight to St. Mungo's Loan, part of which still existed as Ross Street. Centuries ago this road had passed over the Dovehill ridge, then by the burnside to Cathedral Square, the original town site of Glasgow. That this route was the early "gait" from the south long before there was any High Street was favoured by "G. B." in "Glasgow Past and Present." A rath or Celtic fort in the north part of Cathedral Square, the great ditch of which was discovered in 1853, and a prehistoric farm town at the Balmanno Braehead were, in the lecturer's opinion, the Deshu and Cathures to which St. Mungo came, following the ox car.

The further exploration of the Roman camp at Ambleside was intended to have been suspended for this year, but within the last few days Mr. W. G. Collingwood, of Coniston, was informed that there were various local trust funds which could not be devoted to war purposes, and must be used for antiquarian research. It has, therefore, seemed to the Council of the Cumberland and Westmorland Archæological Society to be reasonable that the money should be used, if circumstances permit, during the summer, for employing some of the Ambleside men who are too old to go to the war to do a little digging in August. In view of that proposal it was decided at the spring meeting of the Society at Carlisle to hold the annual meeting at Ambleside in September, there being only one meeting, confined to a single day, instead of July and September gatherings of two days each. The commandant's house has not yet been done, and in Mr. Collingwood's opinion there are likely to be interesting finds, especially as to the succeeding periods of destruction and rebuilding.

Mr. Robin G. Collingwood, Oxford, who is coming to the front rank as an authority on matters connected with the Roman occupation of Cumberland and Westmorland, sent a paper to the meeting on the investigations at Maiden Castle, Stainmore, and it was read by his father. The Rev. T. Westgarth, vicar of Stainmore, when digging in the Roman fort at Maiden Castle, last summer, found a number of articles and remains, which he had sent for identification. The Samian ware was from drinking vessels of the third or fourth century, and other remains could be attributed to the second, third, and fourth centuries. These and a defaced coin showed that there was Roman occupation on the fort on Stainmore from the second century to certainly A.D. 350, or throughout the period when the Romans were in the North of England. Digging would probably reveal much that would add to historical knowledge.

In connection with some inquiries from Professor Haverfield, the question was raised as to the whereabouts of Hanging Shaw, and it was finally agreed that it was the hamlet of that name near Appleby. One of the last acts of the late Rev. Albert Warren, vicar of Bongate, whose loss the Society deplored, was to obtain rubbings of a large stone found there, and on the inscription Mr. W. G. Collingwood gave a scholarly and interesting account of the words, showing how Romans at times were led to making the most extravagant claims for their Emperors.

There was supposed to have been Roman camps at Hall Hill and Chesters, Alston, in the watershed near the junction of Westmorland, Cumberland, and Durham, but the sites had been partly eroded by the River Tyne. Coins had been found, but the pottery was not Roman. Mr. R. G. Collingwood had come to the conclusion that it was not a Roman site, though not far away there was a place which looked like an early hut circle, which he suggested should be explored. There was a probability that it may have been a British site, which was occupied in Roman times.

The transfer to the London County Council of certain duties under the Mental Deficiency Act, 1913, introduces the question of the design and superintendence of the buildings that now exist or may in the future be required, and the General Purposes Committee of the London County Council have, we think, taken the right course in their report, which says: "The order of reference to the Asylums and Mental Deficiency Committee with regard to the functions of the Council under the Mental Deficiency Act does not specify whether the preparation of plans and estimates in connection with the provision of new buildings or the alteration and repair of old buildings for the accommodation of cases of mental defect is to be undertaken by the Council's architect or the Committee's engineer and architect. The asylums engineer has such special experience in the designing and providing of new asylum buildings and in the improvement of old ones, and is so well acquainted with the requirements and regulations of the Board of Control, that the Asylums and Mental Deficiency Committee strongly recommend that he should be employed by the Council for work under the Mental Deficiency Act. The Council is promoting legislation in the present session of Parliament to transfer to the Council the officers of the Committee without prejudice to the rights of such officers, and pending the decision on this proposal we consider that the work in question may safely be entrusted by the Council to the engineer of the Asylums Committee notwithstanding the disability that he is an officer of the Committee and not of the Council. When Parliament shall have settled the question of the transfer of the officers of the Committee we shall be in a position to consider as to the permanent execution of the preparation of plans and the supervision of building work required for the purposes of the administration of the Mental Deficiency Act."

The Archdeacon of Exeter, at a Visitation Court for the Deanery of Christianity held at Exeter, gave some very sound advice with regard to church memorials when he said that it is possible, if not probable, that in the near future many wishes may be expressed to erect brasses or place coloured windows or other forms of decoration in our churches as memorials. The clergy will always wish, as far as possible, to show sympathy with those desiring to do so. There are, however, considerations to be observed. Memorials, although beautiful in themselves, are often designed without reference to the style and architecture of the building in which they are to be placed. Coloured glass of great variety of style and the work of different artists is to be seen without any connecting ideo of thought in the design and subject. Nothing varies more than taste. Uniformity in mediocrity is almost better than contrast of even good designs. In any case it is important that nothing should be done without obtaining a faculty. To erect without a faculty gives a very plausible excuse, though not valid in law, for a succeeding generation to take away without one; and the slight inconvenience of delay or expense to obtain legal sanction relieves incumbents of a great deal of responsibility and difficulty. We run the risk of having some very stringent regulations imposed by other than Church authority to deal with this matter if we cannot see our way to falling in loyally with the law as it stands, for the law is clear enough, though penalties for transgression are cumbersome and very difficult to regulate. In connection with faculties it should be noted that no ground in a parish churchyard can be secured as a grave before death without one, and, therefore, a kerb encircling a bigger space than that occupied by graves already filled should not be allowed.

The difficulty of providing what is nowadays considered proper housing accommodation for the working classes with an economic rent is illustrated by the proceedings at the Dunfermline Dean of Guild Court with regard to plans presented by the Carnegie Dunfermline Trustees for the erection of experimental cottages in

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Damside Street. It was stated by Mr. John L. Jack, Town Clerk, that the Town Planning Committee of the Town Council had sanctioned a relaxation of the provisions of the Burgh Police (Scotland) Acts in regard to the height of the ceilings, which would be eight feet six inches in height, instead of nine feet six inches. Replying to an objection by the Burgh Engineer as to the inadequacy of the sanitary accommodation in respect of the single apartment houses, Mr. William D. Imrie, petitioners' agent, argued that the plans, so far as sanitary requirements were concerned, were well within the statute. The principal object that the Trustees had in view, he explained, was to supply a house at a rental which could be paid by the working classes, and to add further to the cost of construction, thereby increasing the rentals proposed to be charged, would be to defeat the entire object. Dean of Guild Irvine said that the Town Council was aware that there were houses in Dunfermline in which there was not sufficient sanitary accommodation, but because matters had been bad in the past, that was no reason why they should be perpetuated. He added that unless petitioners saw their way to double the accommodation shown on the plans, approval could not be granted. Mr. Imrie intimated that in the circumstances the petition would be withdrawn.

WAR ITEMS.

THE 1st London Divisional Engineers have recently enlisted a large number of recruits as a result of the special efforts put forth, but further men are still required for both Field and Signal Companies in the third line formations.

Men urgently required are those connected with the building constructional trades, bricklayers, carpenters, harness makers and saddlers, blacksmiths, wheelwrights, shoeing smiths, telegraphists, electricians, instrument makers, telephone operators, and men accustomed to horses.

The 1st London Field Company has received very high praise for its work in France, the men having carried out their special work of preparing defence works, making temporary roads, bridging streams and water channels, cable laying and the establishment of field telegraphic communications, &c., under very hazardous, hard, and trying conditions.

It is desired that the men coming forward for the new companies shall maintain this splendid reputation for skill in work, individual pluck and collective enterprise. The need for skilled men is great, and, of course, the pay is proportionately higher than in most other arms of the Service. A fully qualified carpenter can earn up to 45*s*. a week whilst in London, and 33*s*. 6*d*. plus the usual children's allowances whilst at Camp. Full particulars can be obtained by application, personal if possible, to Headquarters, 10 Victoria Park Square Bethnal Green, N.E., or to the Branch Recruiting Office 451 Edgware Road, W.

LONDON COUNTY COUNCIL.

TOWN PLANNING IN LONDON.

IN the discussion on the report of the Building Acts Committee, to which we have referred in "Notes and Comments," Mr. Gautrey expressed regret that the Committee had thrown up the sponge, and recalled the fact that a report had been prepared showing that there were sixty-seven areas in the County of London to which the Act might be applied. There the Council stopped, and as a result builders and local authorities could go on as they liked. A great many people were interested in the beautifying of London, and in making its entrances and exits of a practical character for business and other purposes, and they had looked to this Act for a great many reforms and improvements.

The Deputy Chairman (Mr. Harris) objected to the reference to the Committee being summarily disposed of. It did not necessarily involve capital expenditure, because there were great powers given to local authorities under the Act to schedule land, in order to prevent it being entirely handed over to the jerry-builder and developed in haphazard fashion. Anything in the nature of town planning in London was impossible except through a joint conference of all the local authorities concerned. His own personal desire was to see a Standing Joint Committee constituted, consisting of representatives of all the local authorities concerned, which would keep a careful watch on all building developments in and around London. This would not have been an inopportune time for work of that character to be undertaken. It was essential not to lose sight of the fact that building development, in the matter of small property, was largely at a standstill, and, that being so, property owners might be in a more reasonable frame of mind than when there was great activity in the building trade. To give up all idea of a conference meant the practical abandonment of the Council's responsibilities in the direction of town planning.

Mr. Kingsley Wood (Chairman of the Committee) said most of the statements which had been made were not germane to the question before the Committee. The only question to be decided was whether or not it was desirable to call a conference of local authorities to consider a town-planning scheme for London. That, in the opinion of the Committee, was unnecessary, because the President of the Local Government Board had taken the matter in hand.

Though pressed to a division, the recommendation of the Committee to abandon the idea of calling a conference was carried.

MEMORIAL TABLET.

The Local Government Committee reported that they had decided to take no further action in connection with a suggestion to erect a memorial tablet at No. 5 Great Newport Street, W.C., to commemorate the residence there of Sir Joshua Reynolds, because it had been ascertained that the house he occupied was not the present No. 5, and had been demolished.

With reference to a notice of motion appearing on the Council's agenda paper as to the allocation of £10,000 a year towards the acquisition of pictures, sculptures, statuary, woodwork, ironwork, and other objects of pure and applied art, a suggestion had been made to the Committee that steps should be taken on similar lines, with a view to assisting the artistic professions during the depression consequent on the war. The Committee, however, considered that the present time was inopportune for giving effect to the proposal.

COMPETITION NEWS.

ROSYTH.—Dunfermline School Board last week had under consideration the competitive plans for a large school for Rosyth. The Board invited local architects to send in designs, and fifteen were received. A few of the competitors submitted two sets of plans. Mr. J. A. Carfrae, architect to Edinburgh School Board, was appointed adjudicator. The Board promised that the architect of the plan placed first should be entrusted with the work of designing the school, and that awards of £20, £10, and £5 should be given to those next in order. When the envelopes accompanying the plans were opened it was found that "Light," the plan placed first, was the work of Mr. R. H. Motion; "Navy," second in order, designed by Mr. J. T. Scobie; and "Simplex" and "Light No. 2," third and fourth (equal), Mr. James T. Scobie and Mr. David Beveridge.

ILLUSTRATIONS.

ST. BARNABAS CHURCH, MITCHAM, SURREY.

THE church, which was recently consecrated by the Bishop of Southwark, has been built for the district to which the energies of the City of London School Mission have been devoted. The church is built upon a site surrounded upon three sides by roads, and upon another portion of which a permanent Mission Hall has already been built, while a further portion of the same site is reserved for the Parsonage House. The building consists at present of a nave of four bays and a chancel of two bays with a south aisle, at the eastern end of which are the organ chamber and vestries. The stone arcade runs continuously from the east end of the choir to the west end of the nave, the arches springing from stone piers spaced 21 feet from centre to centre. A lofty belfry is at the east end of the church.

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The building of the north aisle, as well as of the chapel at the east end, has for the present been postponed. The church, when so completed, will accommodate 830 people.

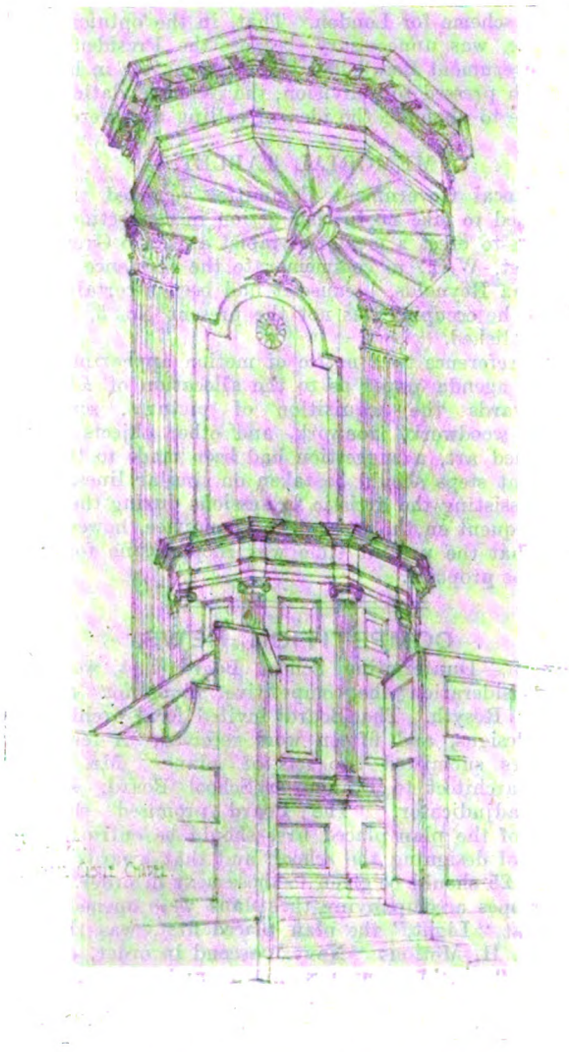
Internally the nave and aisle are nearly the same height, and this height is also carried through the choir and chancel, which are of the same width as the nave. The length of the church is 140 feet, and the width, when completed, by the north aisle, will be 65 feet.

The walls internally are plastered. The paving of choir and sanctuary and the passages are of white Mansfield stone and red Wilderness stone. The church is mainly built of Crowborough purple-brown bricks, with Portland and Ridge Park stone. The roofs are tiled. The cost is about £9,500. The builders were Messrs. Allen Fairhead & Son, of Enfield. The sculpture and carving are the work of Mr. N. Hitch, of Vauxhall. The heating and electric lighting are by Messrs. Shore & Co.

The architect is Mr. H. P. Burke Downing, F.R.I.B.A.

PULPIT IN CHAPEL, CHIPCHASE CASTLE.

THIS drawing was awarded a prize in the monthly competitions of "The Architect" Students' Sketching and Measuring Club. Some description of the work appears on the drawing.



PULPIT.—CHIPCHASE CASTLE CHAPEL.

MR. EDGAR BUNDY (painter), Mr. Glyn W. Philpot (painter), and Mr. Charles L. Hartwell (sculptor) have been elected Associates of the Royal Academy.

COLONEL LOWTHER is continuing the restoration of Hurstmonceux Castle, which he acquired some time ago. He is adding a chapel and a wing to the banqueting hall, 66 ft. by 33 ft. The ceiling of the big hall is to be an exact replica of the roof at Crosby Hall. He has purchased the whole of the old wall at Robertson's Hill, Hastings—stones which at one time undoubtedly formed part of Hastings Castle, and they will be used in the erection of the banqueting hall.

VILLINGEN.

By J. TAVENOR PERRY.

ON the first of April last passed a French airman dropped a bomb or two on Villingen in the Schwartzwald, with the result, according to the *Frankfürter Zeitung*, that a passenger train was nearly caught; but this must have been, as Artemus Ward would say, "wrote sarkastic," since every traveller on the Black Forest Railway knows that such trains so crawl along the line that it is practically impossible to miss one. Doubtless the aeronaut knew exactly what he was about, and did some damage ignored by the German journal, for if any harm had befallen this old-world town or its beautiful minster church as a result of the attack, it would have been a great pity and given the enemy cause to blaspheme.

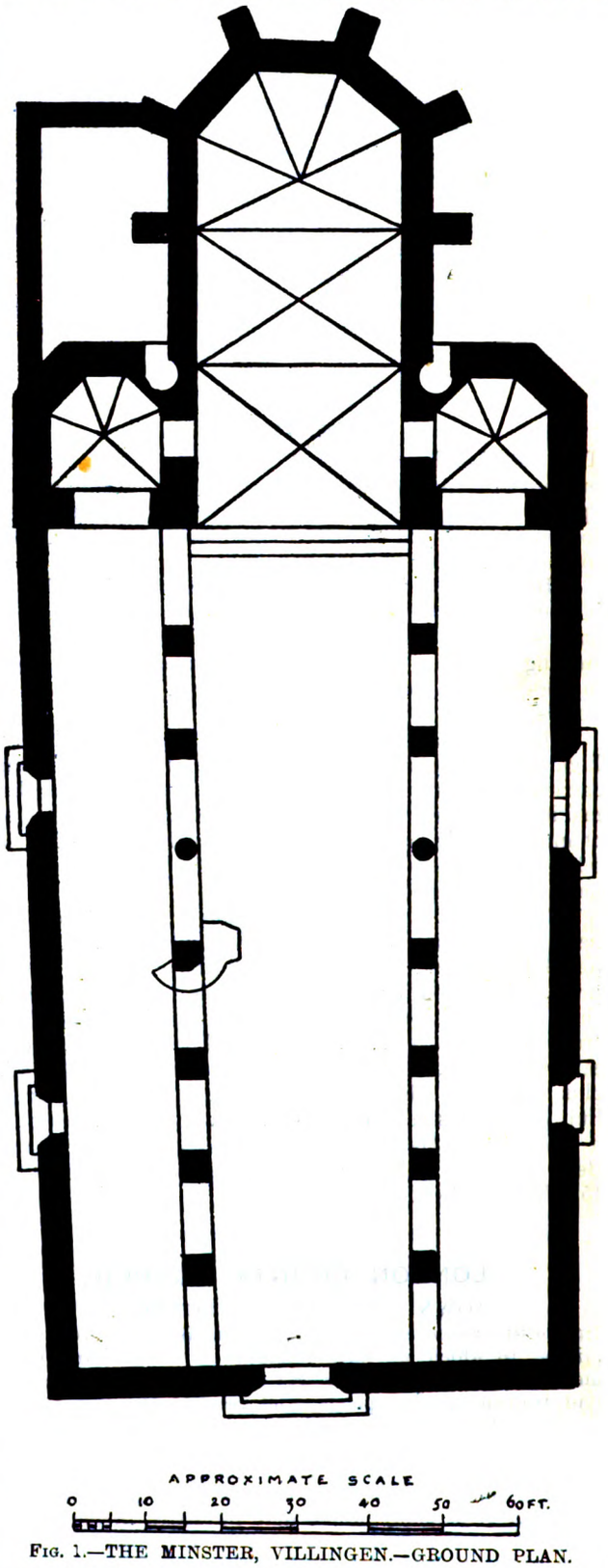


FIG. 1.—THE MINSTER, VILLINGEN.—GROUND PLAN.

Villingen lies on the eastern side of the Forest near the source of the Danube, and a little to the south of the

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series of curves, viaducts, and tunnels by which the line is carried over the watershed of that river and the Necker; but the curt notices in Murray or Bædeker scarcely induce the ordinary traveller to break a journey there; while the number of English architects who have sketched its church must be very limited. The town, though only a small one, presents a well-to-do appearance with many substantial houses, generally of the seventeenth century, probably once the residences of members of the great Shiffersgesellschaften or timber merchants' guild which owned considerable forests in the neighbourhood. The place was built in the form of a regular ellipse with the two main streets on its axes, the major one running nearly due north and south. In mediæval times it was surrounded with walls, and had gates at the ends of the streets, and towers with smaller gates or posterns between them, some of which remain and show that at present it consists of a choir of two bays ending in a hexagonal apse, and with chapels on each side of the westernmost bay, forming quasi transepts, and these are carried up as towers finished with spires. The nave is large and spacious with north and south aisles, set out with considerable irregularity and somewhat rude in the construction. The whole building measures about 184 feet in length over all, and 75 feet in width across the transepts, the choir being internally about 62 feet by 26 feet. On the north side of the choir there is a large sacristy, but this is a very much later addition.

The church is said to have been erected in 1119, although its foundation may be somewhat earlier, but the only portions which appear to belong to that date are the lower parts of the two towers; and these may represent the transepts of the first erection, with an apse set between

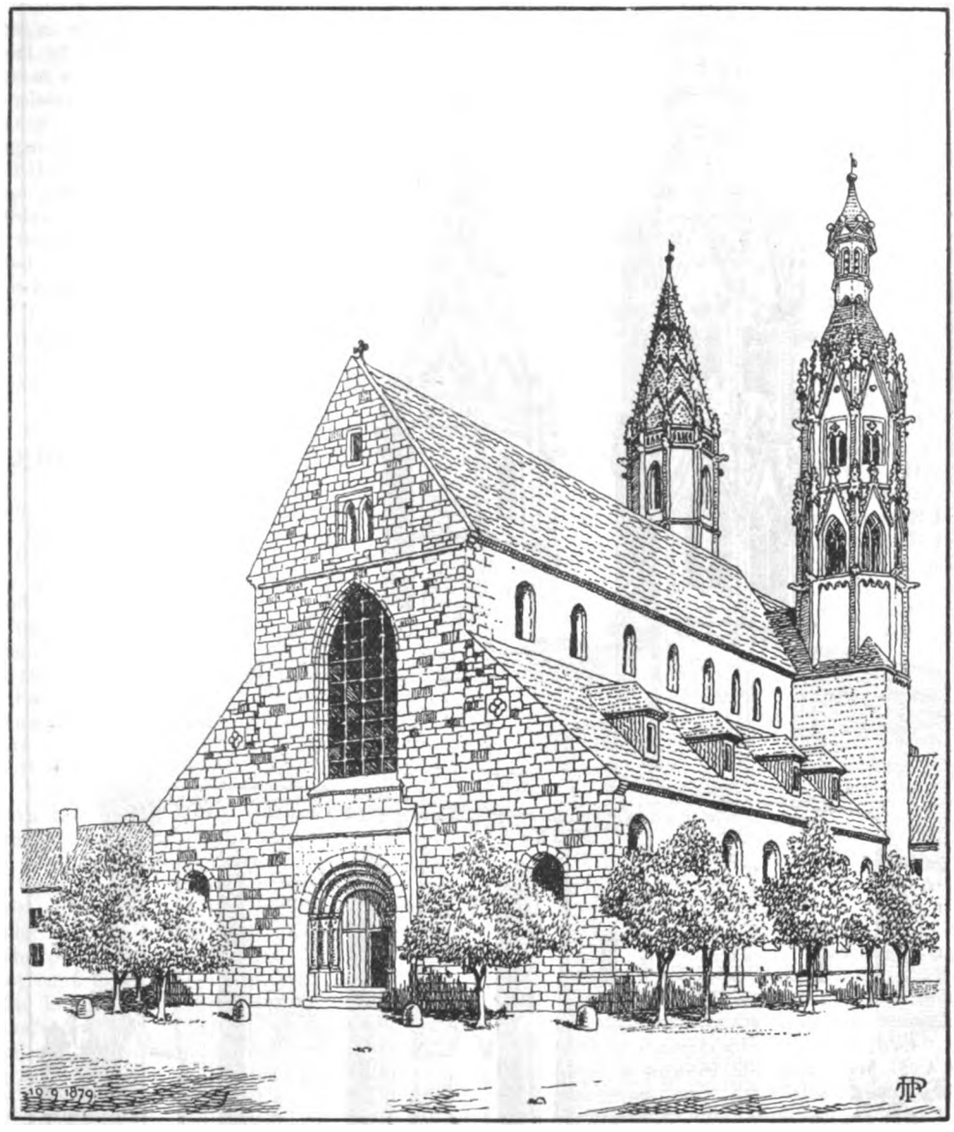


FIG. 2.—THE MINSTER, VILLINGEN.—FROM THE SOUTH-WEST.

give it, in spite of much modernisation, an ancient appearance. This arrangement of the principal streets crossing each other at right angles in the centre, seems to have given rise to the idea, quoted in the guide-books, that the town owed its origin to a Roman fortified camp; but its date seems scarcely anterior to the tenth century.

There were at one time and another several churches and conventual establishments within the walls, of which only three or four remain beside fragments of others which have been destroyed. By far the most important of these still intact is the one known as the minster church, which stands within the north-western quarter of the town nearly at the angle of the main intersecting streets, and is now the parish church. Its dedication seems to have varied at different times, for in 1119 it is described as St. John Within the Walls, while in 1336 it is spoken of as the Church of Our Lady and St. John, probably its correct title. A reference to our sketch plan, fig. 1, will them, terminating a much smaller and aisleless nave. This would have accorded with a typical German church plan of that period, especially if the transepts had been carried up as towers much as we see to-day.

The nave arcades consist of slightly pointed and unmoulded arches supported on square piers without capitals, but one pier towards the centre of each side is cylindrical; above there is a clerestory of small round headed windows without any triforium between. The aisle windows are similar to those of the clerestory but larger; and both the aisles and the nave have flat plastered ceilings with Renaissance ornamentation. At the west end of the nave is a large untraceried pointed window inserted at some date subsequent to the first building. There is a doorway at the west front with a rounded-headed moulded arch in four orders and nook shafts to the jambs, and there is a similar one to the south aisle, but with a double opening; and the little carving there is in the building is in the

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capitals of the doorways, and is of an early transitional character. There are three other doorways in the aisle walls, two to the north and one to the south, exactly like the windows prolonged to the floor level.

A very fine late stone pulpit remains, affixed to the central shaft of the north arcade as shown in our sketch plan, and from the mark it bears it is presumed to be by the same sculptor as the one who carved the pulpit of Munchweiler in the Palatinate, of the known date of 1511. The steps winding round the west side of the pier are enclosed, like the pulpit itself, with a solid parapet having thereon subjects from the Stations of the Cross arranged processionally upwards round the curved side leading to the Crucifixion in the centre of the pulpit front. All the figures are in the highest relief, full of the quaint costume, flowing drapery and energy of the German sculpture verging on the period of the Renaissance. The tribune itself is carried on a rich shaft, bearing standing figures in niches, and spreading above into a bracket-shaped capital covered with inter-penetrating mouldings and tracery; while the higher portion of the staircase is borne by an independent spiral column, against which is a large figure of Samson, apparently endeavouring to pull it down. There is also an octagonal font of no very great interest but dated 1613, the wooden cover being modern.

As the whole of the interior has been plastered over, and the woodwork is late and poor, there is but little inside the church to call for notice; but the Treasury contains some fine plate, including a jewelled chalice of the twelfth century and a fine silver monstrance of Renaissance work. The exterior is plain in the extreme, as our view of the west end shows (fig. 2), and the stonework of the nave walling is random-coursed and somewhat rough; but the western towers are very picturesque, and being built in a warm red stone with the spire of the north tower covered with glazed tiles in green, blue, red, and white with copper crockets, they together make a pleasing subject for a water-colour drawing (fig. 3). The south tower is a little older

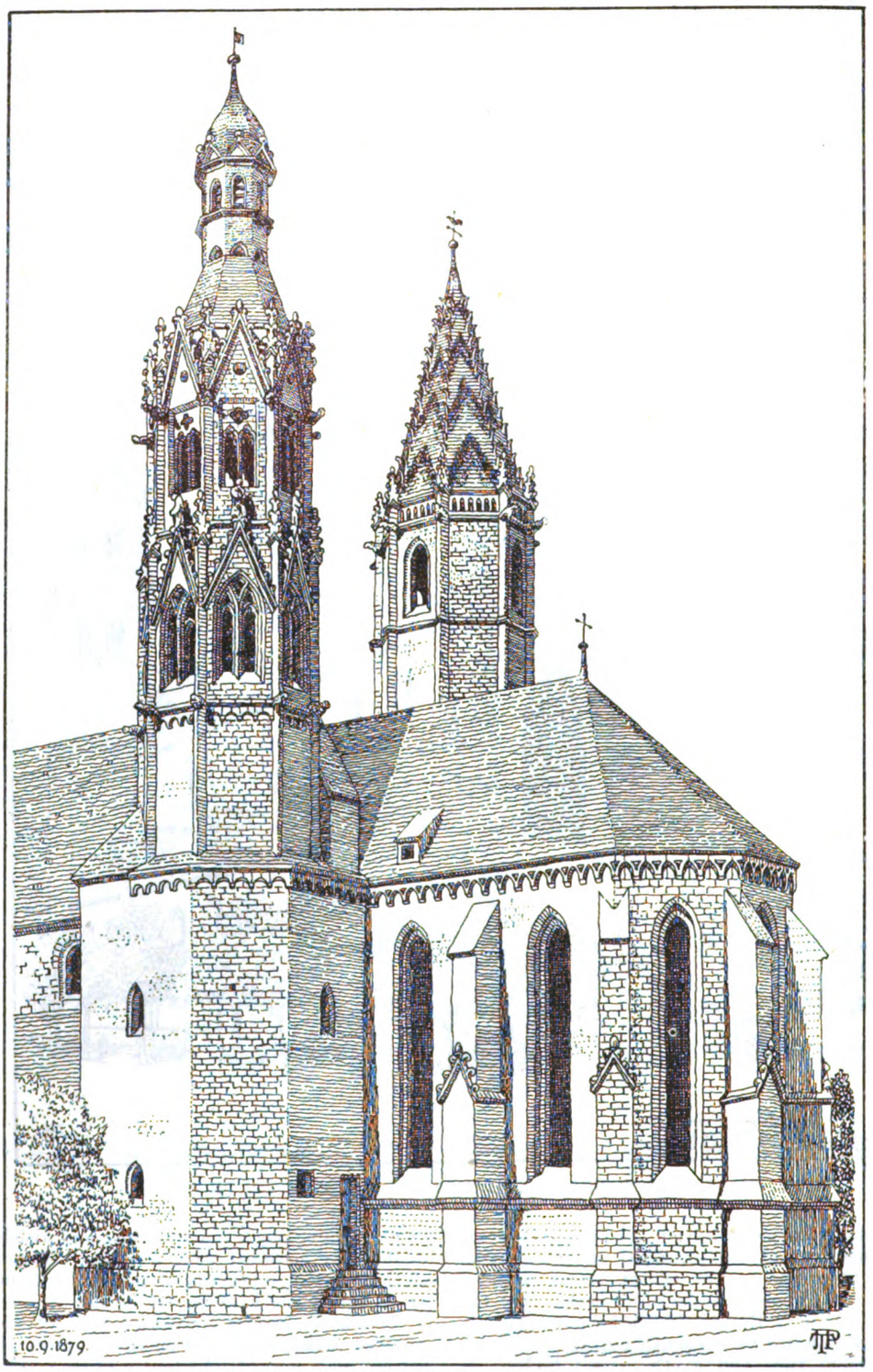


FIG 3.—THE MINSTER, VILLINGEN.—FROM THE SOUTH-EAST.

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than the north and may, with the groined chancel, date from about 1420, the north tower having been completed as it is later for want of funds. In position, colour, and effectiveness these spires recall the earlier ones of Wurtzburg Cathedral.

The tower of a ruined church standing by an old graveyard, and hence known as the Gottesackerkirche, is perhaps contemporary with the earliest part of the minster, and terminates with a saddle-back roof with stepped gables, while the top stage has on each of its faces an arcade of three unmoulded circular arches carried on shafts with wide-spreading corbelled capitals. Another church, once belonging to the Benedictine cloister, of late Renaissance work, is only noticeable for its spaciousness, its arched nave having a clear width of over 40 feet.

There are some very effective bay windows of seventeenth and eighteenth century work, corbelled out from the house fronts of the main streets, and the old Rathhaus contains a good deal of late carved woodwork; but its chief glory was the great earthenware stove with its special seat for the Burgomeister—a seat, presumably, answering to our own "chimney corner" for comfort, warmth, and honour. Villingen was the seat of a tile manufactory where much beautiful glazed earthenware was produced, and the most famous artist employed on these works, Hans Krant, made this stove in 1578. It consists mainly of green glazed earthenware with panels either in high relief or of flat painted tiles. Although it might be well worth a journey to the Schwartzwald to see it, the pilgrimage is unnecessary, for it is now to be found in the Victoria and Albert Museum; and perhaps the archives of that institution might throw some light on the reasons which induced the municipality of Villingen to part with so great a treasure.

THE EDINBURGH ARCHITECTURAL ASSOCIATION.

THE annual general meeting of the Edinburgh Architectural Association was held last week in the rooms of the Association at 117 George Street, Mr. T. Forbes Maclennan, A.R.I.B.A., the President, in the chair. The reports of the Committee of Management, the Council, librarian, convener of the Publication Committee, and the War Committee were submitted and approved. The following office-bearers were re-elected: President, T. Forbes Maclennan, A.R.I.B.A.; Past President, A. Lorne Campbell, F.R.I.B.A.; Vice-Presidents, John Wilson, F.R.I.B.A., and T. Aikman Swan, A.R.I.B.A.; Hon. Secretary, James Kerr, F.F.S., 122 George Street; Hon. Treasurer, W. G. Walker, C.A.; Hon. Librarian, James A. Arnott. The President, in the course of his address, gave a brief review of the session's work. He referred to several matters which had been engaging the attention of the Council, and which, he said, were typical of the difficulties of the independent architect, whose province was being invaded by the universal provider and the alarming growth of officialdom. If architects cheapened themselves—and apparently the practice was not confined to those who were struggling at the bottom of the ladder—how could they expect to receive adequate remuneration for sketch plans which they were asked to prepare, and which were often the product of many years' training and hard-won skill and experience? The Royal Institute of British Architects had recently called the attention of the Council to the failure of municipalities generally to take advantage of architectural advice at the initial stages of town-planning schemes. Mr. Maclennan remarked that a striking example was the laying out of the site of the old slaughter-houses in Edinburgh. Was it possible that, after all the conferences on town-planning and the deputations, the costly blunders of the past were to be repeated? A discussion followed.

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

THE fifty-second annual meeting was held on Tuesday, April 20. The chair was taken by the President, Mr. Harry Gill, M.S.A.

The Council reported that they had to record the resignation of Mr. Herbert Walker, a Past President, and the loss by death of Mr. Arthur Marshall, a Past President, and Mr. T. H. Whittaker, an Associate.

The total membership was now 125, an increase of five over last year.

The privilege of honorary membership, until peace is declared, has been granted to Mr. Van Reybrouck, a Belgian architect, at present a refugee in Nottingham.

The Council have been in communication from time to time with the master builders, plumbers, and heating engineers.

Six meetings have been held during the past session, including a lecture on "Town Planning," by Mr. Raymond Unwin, F.R.I.B.A., the recently appointed Government adviser on this subject. This meeting was arranged as a popular lecture at the University College, and the surveyors and members of the Town Councils of Nottingham, Lincoln, Derby, and other local authorities attended.

The Council are proud to state that twenty-four members are at present on active service serving their King and country.

In addition to a Town Planning Committee, an Architects' War Emergency Committee has been appointed.

The financial position of the Society is very satisfactory, the year's working showing a substantial balance in hand.

Owing to the majority of the junior members being with the Colours, no meetings of the Designing Club have been held.

The year's prize-winners are:—

For Measured Drawings: First prize, Mr. D. E. Knight (now a sapper in the Royal Engineers). Second prize, Mr. K. V. Weston (O.T.C.).

For Vice-President's Sketching Prize: Mr. K. V. Weston (O.T.C.).

The following officers were elected:—

President: Mr. Harry Gill, Licentiate R.I.B.A., M.S.A.
Vice-President: Mr. H. G. Watkins, A.R.I.B.A.

Council: Messrs. P. H. Currey, F.R.I.B.A.; R. Evans, F.R.I.B.A.; W. R. Gleave, A.R.I.B.A.; A. E. Heazell, F.R.I.B.A.; T. H. Thorpe, F.R.I.B.A.; E. R. Sutton, F.R.I.B.A.; H. P. Gill; C. E. Howitt, A.R.I.B.A.; R. Spencer, Licentiate R.I.B.A. Hon. Secretary and Treasurer: Mr. F. M. Royle, Licentiate R.I.B.A. Hon. Librarian: Mr. R. Spencer, Licentiate R.I.B.A. Designing Club Hon. Secretary: J. Woollatt, A.R.I.B.A. *Auditors*: Messrs. F. W. Gregory and R. Spencer, Licentiate R.I.B.A.

A vote of thanks was accorded the retiring officers.

The meeting also discussed suggestions for the better laying out of streets and buildings.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE annual meeting of the above Society was held at their rooms, 13 Harrington Street, Liverpool, on Monday last, the 26th inst.

The following officers were elected: Mr. E. Percy Hinde, A.R.I.B.A., President; Messrs. Richard Holt and T. T. Rees, Vice-Presidents; Egerton L. Bower and E. H. Honeybourne, unofficial members of Council; Fellows: Otis D. Black, W. Glen Dobie, T. Edgar Eccles, G. Hastwell Grayson, C. H. Reilly, P. C. Thicknesse, and A. Thornely; Associates: F. E. G. Badger and L. B. Budden; hon. auditors, W. E. Willink and P. Abercrombie.

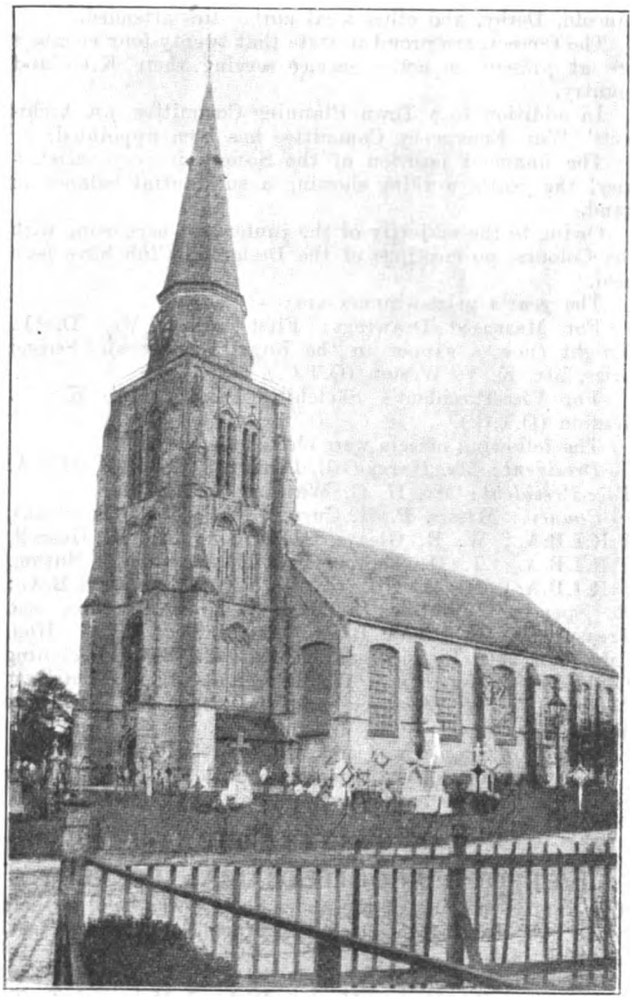
The report, which was approved, showed that the present membership consists of sixty-four Fellows and forty-eight Associates, a total of 112, and there are also three honorary Fellows, nine hon. Associates, and eight students. At present not less than eighteen of the members, three of whom were also members of the Council, were known to be serving in his Majesty's Army. The Council, on a request of the Royal Institute of British Architects, had appointed a War Committee, which had dealt with such matters as had arisen, and investigated applications for assistance from persons residing within the Society's province. The effects of the war were being severely felt in many directions, and a request having been made that the Society would nominate a member to assist in forming a Liverpool Committee to deal with any local cases of distress among the professional classes arising out of the war, the Society nominated the Vice-President, Mr. E. P. Hinde, to represent the architectural profession. The President for the past year (Captain Gilbert Fraser) having been granted a commission in the 1st City Battalion of the King's Liverpool Regiment, the members presented him with a service sword as an expression of personal goodwill and of their appreciation of his many services rendered to the Society. The Council, through their Town Planning Committee, had kept in touch with the procedure of several local authorities, who had sought powers under the Town Planning Act.

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LANGEMARCK.

By JOHN A. RANDOLPH.

Now that the village of Langemarck is in its agony, and all eyes are turned towards it, an illustration of the fine steeple will be welcomed by readers of *The Architect*. It will be noticed that the two rich stages of the tower above the west door are earlier than the belfry one, whose lights are round-headed and devoid of cusping, surmounted by late dripstones with no crockets, but only finials.



THE CHURCH, LANGEMARCK.

There is a thin iron railing at the top, the tower never having been fitted with a parapet or pinnacles.

The bottom portion of the two-bodied spire is slightly bulbous in shape, the whole, however, being of fine proportions, and neither too big nor too small for the typically Flemish tower beneath.

The present church is of poor Renaissance, replacing a Gothic one that was destroyed.

THE FINDING OF THE FIRST ASSYRIAN ROYAL TOMBS AND THE PYRAMID AND ZIGGURAT COMPARED.

UNTIL the recent discovery of a group of five Royal tombs, the question as to the burial places of those mighty kings of whom we read in the Bible has always defied the archæologist ever since his spade first turned the sod in Assyria and Babylonia.

The British Museum testifies to the battles and conquests of these monarchs, as recorded on the alabaster slabs which adorned their palaces, and the library of clay tablets in cuneiform characters found at Nineveh supplies much of the information we know about them and their deeds; but how they were buried, or where, was utterly unknown.

Twelve years ago operations were started at Ashur, the ancient capital of Assyria, on the western bank of the Tigris, by the German Oriental Society.

Under the influence of this Pan-Babylonian theory—a theory sceptically received by other nations, but which, in all probability, had a fairly political object in view—Dr. Andrae, the leader of the expedition, claimed that the ziggurat, or temple-tower, may be like the pyramid—a royal tomb-house.

In his examination of this suggestion Dr. L. W. King, of the British Museum, made a carefully drawn comparison between the burial customs of the ancient Egyptians and what we know of the burials of the Assyrians and Babylonians in a lecture he delivered at Burlington House to the members of the Egypt Exploration Fund.

Our knowledge of the rites and ceremonies connected with the burial of the dead in Egypt can be traced from historic, right back to pre-dynastic times, in an almost unbroken line, and there is no race belonging to antiquity about whom we know more.

The daily life of the Egyptian is read and translated in the manner in which he treated his dead, and we owe our information largely to the dry climate which has preserved intact so many burials, with all their grave gear and funeral furniture, &c. When the reverse is found, neither climate, time, nor nature have been the cause, but the destructive hand of the tomb-robber, for in many cases bodies have been plundered and rifled within a short time of their burial.

Doubtless in earlier times the method of burial in the sand only a few inches below the surface influenced the belief of a life after death, for the early Egyptian, finding his dead preserved so long in the shallow grave, concluded that as long as the body remained in existence the soul still lived. He then sought a means of preserving that body still longer by smoking or scorching with fire in order that the soul might have a longer life; this led to the elaborate mummification which was practised later.

Another instance showing how the early burial customs no doubt influenced the belief and religion of the people is found in the office assigned to the black jackal of the desert, "the chief despoiler of the shallow pre-dynastic graves," who, in the form of Anubis, is made the guardian of the dead and conducts the souls into the presence of Osiris, with whom in later times the deceased became identified and was worshipped by the living "not in his own form, but in the person of the god."

With the Egyptian the main object throughout was to promote the happiness and welfare of the departed in the next life, affection and reverence demanding that the dead should be provided with all that might be necessary to that welfare.

It is true that in neolithic and early dynastic times the Egyptian and the Babylonian of the Early Bronze Age both practised "contracted" burials, the sitting or crouching attitude with the knees closely drawn up, but at a time when couches, seats, and tables were unknown this was the natural position of repose to people of a very primitive civilisation, and Dr. King finds here no sign of borrowing from either country; neither does he see imitation in the "pot-burials" of the Assyrians—nothing but the natural outcome of a desire to preserve the dead as long as possible in a climate not naturally favourable for long preservation: wood was scarce, and they placed anything they wished to keep in earthenware. The round pot in time gave place to the long-shaped pottery coffin, many examples of which have been found.

Egypt and Assyria alike buried their dead on the reed sleeping mat used during the life of the deceased, but here again was a primitive custom common to both, and the outcome only of early civilisation.

Weapons, tools, and utensils of every-day life were buried with the dead in both countries: the Egyptian, however, had a great horror of manual labour in the life to come, where he was to be the possessor of lands in the Elysian fields if the deeds of his life on earth turned the scales in his favour in the ceremony of the weighing of the soul at the judgment seat of Osiris; and although in certain representations the person himself is depicted as ploughing or cutting the corn, it was thought that the mere fact of the representation would by magic free the individual from the actual toil, for which the living provided him with other means. In the boxes of ushabtiu found in great numbers in the later burials we see the survival of the custom practised in the time of the first dynasty kings at Abydos, of strangling and burying slaves with their dead master in order that they might serve him in the next world. The word "ushabti" is thought to be connected with the word to "answer," and on many of the little slave figures is written "Verily I am there."

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Love and forethought for the wants of their departed was the characteristic of Egyptian burials; but although affection to some extent doubtless influenced the Babylonians, yet their attitude towards the dead was one of intense fear rather than that of affection.

Of all the nations of antiquity the Babylonians were the most "spook-ridden," and from their magical texts it is clear that the ghosts held by them in the greatest dread were the spirits of the dead who for some reason had not been able to reach the underworld after leaving this life. Hungry and thirsty, they would roam about the world and fasten on anyone with whom they had had dealings during their life, and torment them until they performed certain rites and ceremonies whereby they were laid at rest. Thus we see a haunting fear of the dead the primary motive for the scrupulous observance of funerary rites with the Babylonian and Assyrian, whereas only forethought for their welfare in the future state prompted the Egyptian, and the fundamental contrast gives little ground for finding early Egyptian influence in Assyria; in truth, so far as the burials are concerned, not until the Hellenistic period does that influence make itself manifest.

It had been thought that the charred remains of two ancient cities in Southern Babylonia excavated by Dr. Koldewey were two immense necropoles, where the early Babylonians had been in the habit of burning their dead; and the theory of cremation, or at least of partial burning, for early Mesopotamian civilisation, has indeed been accepted unchallenged in certain recent works, but it is perfectly clear from all Babylonian and Assyrian literature that they have never practised such a custom, but have always buried their dead, and for earlier evidence than the cuneiform documents a sculptured slab has been found, dating 3,000 B.C., in which the dead are being *buried* after battle; this is clear from the baskets of earth that are being emptied over the bodies.

The finding of burials in the rooms of the houses of the burnt cities, mentioned above, again gave rise to the idea that they buried their dead in inhabited houses, but closer investigation showed that the whole place had previously been abandoned for dwelling purposes, and after a lapse of some time had been used as a cemetery. This was proved by the presence of burials several feet above the level of the roadway of the ancient town. The wells of the city had at first been construed by the excavator into an elaborate system of necropolis drainage, but the later investigations disposed of the illusion.

In the royal tombs lately discovered there is practically no ground for tracing any connection between them and the ziggurat, and still less for finding in the ziggurat any likeness to the pyramid either of intention or of purpose. The only example which offers itself timidly for examination is the Pyramid of Tjeser, better known as the Stepped Pyramid, at Sakkârah, belongs to the third dynasty.

Tjeser built himself a mastaba at Bel-Khallaf, in Upper Egypt, as King of the South, and the Stepped Pyramid in his capacity of King of the North.

Oblong on plan, measuring 352 feet north and south by 396 feet east and west, and about 197 feet in height, this monument marks a stage of transition between a pyramid and a mastaba, the evolution of which may be traced back to the pre-dynastic prototypes found at Tarkhan (*The Architect*, July 11, 1913).

The core consists of a solid cone of limestone, built of small units and derived not from the mastaba, but from the steep stone tumulus, with the tomb chamber inside. Owing to the small stones, it was necessary to support the core by a strong outer casing of brickwork, and it is here that this pyramid offers a hesitating genealogy to the ziggurat, for the outer casing was made in stages, or steps, resembling, it is thought, the superposition of one mastaba on another, and doubtless suggested by the construction of the mastaba itself, for its stones, laid vertically, usually recede from the face of the layer beneath, and would form steps if the receding plane were greater; but here the likeness to superimposed mastabas ends, and there is but one tomb chamber at the base of the tumulus.

Compared with the ziggurat, the pyramid had six stages, and the Assyrian temple-tower sometimes as many as seven, though the two towers found in the temple area at Ashur suggest, as restored, but four; but a point not to be overlooked is that these stages were reached by means of ramps, or steps, constructionally evident, whereas the pyramid steps are horizontal with no means of communication.

Turning to Ashur, the seat of the new discovery, during the twelve years that operations have been in progress there the greater part of the palace and temple area have been uncovered. The completion of the work in digging down to virgin rock was left to the last, as it would naturally entail the disturbance of some of the buildings already uncovered, and until all plans and measurements had been made and taken this could not be considered. It was in these final excavations that some very important discoveries were made, proving the ancient capital to have been the seat of a far more ancient civilisation than had hitherto been imagined.

Digging below the Temple of Ishtar, the national goddess of Assyria, a temple of earlier foundation was discovered, also dedicated to the same deity and dating from the close of the third millennium. It has been proved that this is the oldest temple yet found in Assyria; but the discovery did not end here, for, digging lower still, a stratum belonging to a yet earlier race was brought to light.

Slabs of rude sculpture were found, which proved to be representative not of the Semitic race to which the Assyrians belonged, but of the earlier and more highly civilised race of Sumerians who had originally settled in Southern Babylonia, and from whom the Semites borrowed the system of cuneiform writing, adapting it to their own requirements.

It was among these discoveries that the sculptured slab already mentioned, showing the burial of dead after battle, was found, and although these slabs belong to a period when the "contracted" form of burial was in practice, the outstretched attitude depicted in the sculpture is doubtless due to the fact that time would not allow of the usual process owing to the great numbers to be dealt with. It was in digging in the palace area that the most important find of all was made: this was the discovery of five royal burials. The tombs, which consist of vaulted chambers of burnt brick, were reached by means of steep ramps communicating with the palace and closed with massive stone doors. The bodies had originally been placed in heavy sarcophagi of basalt and limestone, reminiscent in their style of those of the first kingdom in Egypt. Sharing the fate of most Egyptian royal burials, these tomb-chambers had been visited and plundered by robbers in bygone years, probably in Parthian times.

The five sarcophagi had been deliberately smashed, the bodies removed, and not a vestige of grave gear or funeral furniture was to be found; but by carefully piecing the fragments together, the names of three kings have been deciphered, owing to those names having been inscribed several times on various parts of the sarcophagus. Thus at last we know the place and mode of burial of five Assyrian kings—the first royal tombs that have ever been found either in Babylonia or Assyria, and they date from the eleventh to the ninth century B.C.

Ashur-bel-kala, the son of the great conqueror Tiglath-pileser I.;

Ashur-nasir-pal III., one of the greatest and certainly the most ruthless of Assyrian kings; and

Shamshi-Adad V., the husband of Semiramis.

These vaulted tombs have no connection whatever with Ashur's two temple towers, although not far distant, but on the contrary they communicate with the palace and give no ground for supposing that the towers were also royal burial places; but still we are no nearer to a definite conclusion as to the origin or purpose of these towers whose mounds of solid brick, in some cases now only a few feet above the ground level, are found on the sites of so many ancient cities in Assyria and Babylonia.

In the royal inscriptions referring to the building and dedication of the towers there is nothing to suggest any connection whatever with royal burials, but everything to indicate that the ziggurat was the abode of the god to whom it was dedicated, and that it may perhaps have served for astronomical observations.

THE sixth annual general meeting of the Concrete Institute will be held at Denison House, Westminster, S.W., on Thursday, May 6, at 7.30 P.M., after which discussion will be resumed on Mr. Osborn C. Hills's paper entitled "The London Building Acts with some Suggested Amendments." The paper by Mr. E. A. W. Phillips, M.Inst.C.E., entitled "Lime Concrete in the East," which was to have been read on May 6, will be read on May 22. It has been decided to abandon the annual dinner this year.

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L.C.C. TECHNICAL INSTITUTES, SCHOOLS OF ART AND TRADE SCHOOLS.

THE Education Committee of the London County Council in submitting a summary of the annual reports for the session 1913-14 of the Principals of their various technical institutes, &c., point with pardonable pride to the success which in many cases has following the training given.

Art and Artistic Crafts.

The standard of work in the Council's schools of arts and crafts has been well maintained, as is indicated by the numerous successes of the students in the various competitions for which they have entered. In certain cases the annual grants receivable from the Board of Education have been materially raised.

At the Beaufoy Institute an increasing number of girls employed in the embroidery trades attended the art and embroidery classes, and as a result of their receiving instruction in tapestry weaving, a considerable amount of tapestry mending is done in London which would otherwise have probably gone out of the country.

Two students from the stained glass class at the Camberwell School of Arts and Crafts have obtained situations at Glasgow and Boston, U.S.A., respectively, at good salaries; three other students of the school have been appointed as teachers of art in the Manchester School of Art, Ramsgate and Margate Secondary school, and the Woolwich Polytechnic, respectively; a number have obtained situations in dress-designing houses, advertising studios, and in black and white work and designing. Some of the students of the school have exhibited at the Royal Academy, the New English Art Club, and other exhibitions. Two students have come considerably to the front in artistic life through the merit of their work. The co-operation of employers with the school has been well maintained throughout the session; specimen books have been sent to printing firms, and in the bookbinding section work has been sent for employers to judge of their apprentices' progress. Printing firms have sent their apprentices in increased numbers during the employers' time, and one large firm has expressed its intention to release apprentices from early morning work, if they have attended classes during the previous evening.

At the Central School of Arts and Crafts collaboration between the various departments of the school continues slowly to increase. The students of the printing classes have been able to be of service to the Council in suggesting improvements in the setting up of notices, posters, invitation cards, and other announcements. The day technical schools in silversmithing and book production, and the early evening classes for young tradesmen, have been the objects of much inquiry from provincial directors of education, particularly the printing section of the school of book production. The director of education in Johannesburg has also made exhaustive inquiries on this subject. The whole school has continued to develop in accordance with its original aim. Certain students have produced posters for the London underground railways, have executed other commissions for trade purposes, and have been in evidence at various exhibitions of art and craft.

The school was represented in the special summer number on book production issued by the proprietors of the *Studio*. Students of the bookbinding school bound and decorated two books for presentation to their Majesties the King and Queen on the occasion of the display of the L.C.C. Fire Brigade. One of the students gained the first prize in the open competition in cabinet-making promoted by the Carpenters' Company.

Applications from firms for designers and craftsmen have led, in most cases, to the appointment of students recommended for the posts.

All the pupils who have left the day technical schools in book production and silversmithing have entered the trades for which they have been trained, and have been placed with good firms. Copies of books produced by the school of book production, "The Autobiography of Benjamin Franklin" and Spenser's "Four Hymns," have been sent to the Bodleian Library and the British and the Victoria and Albert Museums.

A former student of the Clapham School of Art has been awarded the British Institution scholarship of £50 a year for two years, for painting.

A student of the Hackney Institute School of Art has obtained the "Stock Trust" prize (a gold medal or £20), awarded by the Society of Arts for interior decoration, and another student gained the first prize in a competition for interior decoration instituted by the Carpenters' Company.

Two students of the Norwood Technical Institute School of Art exhibited miniatures at the Royal Academy and the Walker Art Gallery.

Building Trades.

The demand for the junior day school pupils trained in the Brixton School of Building still continues. One of the pupils (a scholarship holder), who left in April 1914, was receiving in September 1914 7*d.* per hour as a bricklayer's improver. Students of the school have obtained three intermediate and two final (qualifying for fellowship) successes in the examinations of the Surveyors' Institute, and three (intermediate) passes in the examination of the Royal Institute of British Architects.

One student of the Hackney Institute has obtained a gold medal of the Plumbers' Company for his work.

Engineering.

A past student of the Hackney Institute, largely on account of his training at the institute, has been promoted to be manager of his firm's Manchester branch. The demand for the boys trained at the day technical school of this institute has so far exceeded the supply. It is satisfactory to record that one of the third-year boys who was one of the first selected by Messrs. Mather & Platt as a higher grade apprentice, was sent by the firm to assist in the supervision of a large contract in France. On this falling through, because of the war, he was, on the recommendation of the principal, appointed assistant to the works manager at Messrs. J. A. Prestwich & Co.'s motor works.

Five boys have passed from the day technical school of the Paddington Technical Institute into various branches of the Army, and the school certificate has been accepted in two cases for entry into the Royal Engineers.

Gas Fitting and Engineering.

The scheme of training gas fitter apprentices at the Westminster Technical Institute is working to the satisfaction of the Gas Light and Coke Company, whose apprentices derive great benefit from their studies at the institute.

The officials of the company are becoming more and more alive to the necessity of providing their employees with technical instruction, and it may be mentioned that that company refunds the fees of those employees who make 75 per cent. of the possible attendances at the classes.

Woodwork and Metalwork.

The Principal of the Shoreditch Technical Institute reports that there is now less difficulty in placing boys trained in the day technical school, and that he has received many encouraging reports of boys earning very good wages shortly after leaving school.

The Principal of the Beaufoy Institute has co-operated with the juvenile advisory committees of the Labour Exchanges in placing the boys trained in the day technical schools, which has proved helpful in familiarising him with conditions of employment, and in bringing home to the officials and members of the committees the nature and work of the trade schools and the type of boy turned out.

ART IN LONDON.

TRIA JUNCTA IN UNO AT THE LEICESTER GALLERIES.

THERE is no lack of variety in the media used for the works of art now on show in these well-known Leicester Square galleries. Oil and water-colour drawings in pencil and pastel, etching and lithography, meet here and now, being controlled by the hands of Messrs. Tom Robertson, Oliver Hall and Joseph Pennell. The first-named artist has contributed works in oil and pastel, and we must confess to a sense of there being imported exaggeration in his "distance" blues and purples generally, and of a too insistent colouring in such works as "Beyrout, Syria," "Breton Rocks," and "Homeward." Some of the work is redolent of the charm of Nature—"Blossom," "Fairlie Roads," "The glamour of early June," and "Spring Blossom." "A Riverside House" seems to lack force, but this quality is to the fore in "The Towpath" and some other sketches; the best contributions are "Fairlie Roads," "Dawn and a quiet Sea," and "The glamour of early June," but many others also deserve appreciative notice.

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Mr. Hall's water-colour and pencil drawings are far from pleasing; the palette worked from is a dirty one, while the pencil sketches are far from inspiring. The display of etchings is of a very different calibre; though even here the feelings with which we regard the display are of but subdued appreciation. "Durham Cathedral" is a poetical sketch of an effective subject, and "Pine Trees on the edge of the Moor" is one of the best, where, however, not too many are notable; "Lower Duddon Moss," "Sunderland Point," "Castle Acre Priory" and "Ulpha Bridge" are all good exhibits, but the contouring of the arch in the last-named sketch gives a sense of exaggeration; before passing on, mention should be accorded to "Old Cart Shed, Ewhurst," "Coniston Hall," and "A Cumberland Farmhouse."

But it is Mr. Pennell's show that provides the most interest and, as we think, the best work *en masse*; there is very little here that is otherwise than masterly, whether the touch be legato (as in the artist's more remote style of work) or forceful as in his later manner. What pleases us most as a perfect work of art is "Rheims Cathedral," with its soft, but not effeminate, draughtsmanship; it is entirely picturesque, with nothing meretricious in its broken-line treatment. At times Mr. Pennell is slap-dash, even worse, in his technique; as a rule, however, the tool is responsive to the manipulation of such a thorough master of his craft; "Lord Mayor's Day, 1914," "Great Tails of Comets," "Yet Work goes on," "Guarding Town and River," and "The busy river," all of these merit especial notice; and "Zeppelin coming out" is one of the most powerful and effective sketches in a series devoted to "London in War-time."

THE REPORT OF THE LAND ENQUIRY COMMITTEE: URBAN HOUSING.*

By C. S. JOSEPH (Visitor).

(Concluded from last week.)

I WOULD now turn for a short time to a consideration of the remedies suggested by the Land Enquiry Committee. I propose considering these as summarised by me, and the first is—

1. That as a result of a complete survey of their district a local authority shall prepare a scheme for the provision of the necessary housing accommodation, particularly for the population likely to be permanently resident within their area.

A complete survey of the whole housing conditions and requirements for each district can only be accompanied by good results, but in order to secure this it is not really necessary to await further statutory authority.

In London, at any rate, the local authorities are empowered to make inspections in their districts with a view to ascertaining what nuisances, including overcrowding, exist, and have power to abate such nuisances and to secure the proper sanitary condition of all premises in their district. Notwithstanding this, when Lord Islington (then Sir John Dickson-Poynder) endeavoured to introduce into the Housing, &c., Bill, 1909, a clause making it obligatory to have a complete survey of a district every five years, so great an objection was taken to it that it did not obtain Parliamentary sanction. The Act did, however, contain a provision for a systematic inspection from time to time with a view to ascertaining whether any dwelling-house was in a state so dangerous or injurious to health as to be unfit for habitation. There is no time limit, although the Local Government Board may make regulations with regard to the performance of this duty.

The authorities, having ascertained the facts and framed an estimate of the needs of their districts, are to take steps for the preparation of a scheme for the provision of the necessary housing accommodation for those likely to be permanently resident within their area. From a return recently issued, the magnitude of such a task for London is apparent; and if the local authorities were charged by Parliament with the duty of providing this accommodation, the task would be herculean. The bulk of the accommodation provided is in small houses in the suburbs, but there always remains a certain proportion that is necessary in the central district where the areas available are always becoming smaller. According to the latest return available (1913) in the central districts of London there were only seven additional rooms provided for the working classes, the whole of the remainder being outside the central districts.

To avoid any misunderstanding I think I should make it clear that the reason why only seven additional rooms were provided in the central districts is that the number of new rooms constructed—namely, 6,181—were practically entirely counterbalanced by the demolition of 6,174 rooms.

There are no data to enable one to state with any accuracy the increase in the population of this central area, but it is interesting to note that the population of Greater London increased by 72,178 in that year alone. Even in the total number of rooms provided in the outside districts of London in the same year, only about 19 per cent. of the estimated increase would have been housed. It must be borne in mind, however, that the foregoing figures do not take into account the conversion of better-class houses for the occupation of persons of the working classes, of which no statistics are available.

Beyond their powers of inspection local authorities may acquire and demolish obstructive buildings and recoup themselves by levying a betterment charge on adjoining owners, or they may deal with a large or small area by purchase at market value, and rearrange and plan. This method of purchase under statute, although at market value, appears to me to cost more than in my experience property of this kind can be purchased for by private negotiations.

The local authorities also have the power to make bye-laws fixing the number of persons who may occupy a house let in lodgings, and for the registration, inspection, draining, cleaning, and ventilation of such a house. There had long been a statutory provision as to an implied covenant that a house letting within certain limits of rent was reasonably fit for habitation, but, as values grew, this condition applied to but relatively few properties. In order to enlarge its scope, so as to cover the class originally intended, the Housing, &c., Act, 1909, raised the rent levels of the houses included, so that in London houses of £40 and less are subject to this covenant. Not only are the houses to be fit for human habitation at the commencement of the term, but the owners are to keep them in such a condition during the tenancy. If, in the opinion of the local authority, this condition is not complied with, they may require the landlords to execute such works as they may specify in order to make the premises in all respects reasonably fit for habitation. If their requirements are not complied with, they have drastic powers as to closing and demolition without compensation, and there have been some interesting appeals to the Local Government Board on cases so dealt with by the local authority. The effect of the implied covenant is to give the tenant a right to recover against his landlord for injury due to the defective condition of the tenement, but decisions have limited this right to the person of the tenant, and not to members of his family residing with him on the premises.

Local authorities may be kept up to the mark by Section 63 in the National Insurance Act, 1911, wherein it is provided that the Insurance Commissioners may recover from a local authority any increased payments due to bad housing conditions, if it can be proved that in the locality there is at least 10 per cent. more sickness than is normally the case.

Notwithstanding all these powers and the stimulus to activity existing in one form or another, there is still the cry, based on evidence which I fear has only too sound a foundation, that further statutory powers are necessary. I do not share the view that Parliament need again interfere, but local authorities should exercise their existing powers. It is not in the lack of powers, but in the neglect to exercise them that the chief difficulty lies.

The return already referred to shows that in the central districts of London no new tenements were provided by any of the local authorities, and that in fact those bodies only provided 1,688 rooms out of a total of 18,114 provided in the whole of the extra-London districts. I think this proves my contention that the local authorities have not used the powers they already possess. I believe a good deal of the hesitation on their part to embark upon housing schemes is due to the fear that there may be a charge upon the rates. This fear is groundless, as I have completed six schemes for three local authorities in London, all of which show a profit on the working, and this profit could now be

* A Paper read at the Ordinary General Meeting of the Surveyors' Institution, held on Monday, April 12.

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increased if advantage were taken of the borrowing powers under the Housing of the Working Classes Act, 1914.

Hardship upon owners and tenants, and the political effect of losing such tenants as voters, where a clearance is on a large scale, no doubt has a retarding influence. The hardship upon owners has undoubtedly prevented many cases of action that ought to have been taken in the interest of the district and tenants, and the purchase of an area under the Housing Acts has been avoided if possible on the score of cost. One must realise that the clearing of such areas in London has already entailed an expenditure of more than four millions sterling, and it cannot be said that the problem has been more than partially solved. In my opinion, however, no consideration of cost should hinder the proper discharge of present powers and duties of the local authorities, and insanitary property should be dealt with in the same manner as would food unfit for human consumption, or a person suffering from a contagious or infectious disease.

There seems no reason why an annual licence should not be required for all houses let out in tenements, and this licence could be withheld at any time if the premises were considered to be unfit for human habitation.

All owners of working-class property where the annual value of the tenement does not exceed £20, and in respect of which the medical officer of health issues a certificate that the premises are provided with a proper water supply, are granted a valuable concession in the exemption of their property from inhabited house duty. I suggest that this licence should be an annual one, and that the medical officer of health should have power to withhold his certificate if the premises are insanitary.

2. That where sites are not readily available, transit schemes should be promoted, and undeveloped areas town-planned, and congested areas replanned.

Transit schemes of various kinds for rendering land in the suburbs available for building are obviously desirable, and a great deal has been done during the past few years in this direction. Where land has thus been rendered available, town planning of undeveloped land might be adopted with advantage; but, in my opinion, too much has been made in the Report of the question of the number of houses to the acre.

Space in the rooms provided, and more rooms in each house, so as to be able to separate the sexes, is of far more importance than the amount of garden, which in most instances is not properly cultivated by the tenants. Large central gardens, and open spaces and playgrounds, properly maintained by the owners, seem to me to be far more desirable.

There is an underlying fallacy in the suggestion that the number of persons or houses per acre necessarily means a high death rate and insanitary surroundings, for in nearly all block dwellings there are at least 600 persons to the acre, and the death rate is considerably under 12 per 1,000.

The Committee suggest the fixing of a maximum number of dwelling-houses to the acre, and consider twenty-four too many, so that, in their opinion, apparently, there should be fewer than 200 persons to the acre.

The replanning of congested areas is a far more difficult problem. It would be costly to carry out, and it would cause difficulties owing to the displacement of the working class population, and if the suggestions previously made were carried out, large sites would readily become available. The London Building Act is sufficiently stringent to prevent overcrowding upon these sites.

I think I should again reiterate the fact that, notwithstanding there may be overcrowding on any particular area, when the houses are demolished and blocks of dwellings erected in their stead, the number of persons housed is far greater, in practically every instance, than in the insanitary area demolished, as the new buildings are erected to a far greater height than the old ones which stood upon the site.

3. That public utility societies should be assisted financially to enable them to provide such accommodation.

I think the suggestion that public societies should be allowed to borrow a larger proportion than now of the capital required for the erection of working-class dwellings is a useful one, but the rate of interest would have to be kept very low if the schemes are to be self-supporting, more especially if it is desired to house the poorest wage-earners.

This recommendation has already been carried into effect by the Housing Acts of 1914, which give powers to the Treasury to issue loans to any authorised society, company, body or persons whose objects include the erection and improvement of dwellings for the working classes, and whose constitution forbids the payment of interest or dividends at a rate exceeding 5 per cent. per annum.

4. That insanitary property should be improved and adapted to modern conditions in order to mitigate the hardships of the present closing order procedure.

The Committee's recommendation that insanitary property should be improved and adapted to modern conditions has been adopted in Birmingham and in some districts of London, but I am not at all in favour of this movement, as large sums of money are expended on these so-called improvements, which, however, never bring the buildings up to the proper standard, but increase the life of the houses instead of utilising the land on which they stand to the best advantage, and providing buildings which would comply in every respect with modern requirements.

The ostensible object of this method of dealing with such property is the lessening of expense, and to this extent the method may be said to be a success. It remedies the immediate defects, but, as so many inexpensive expedients prove ultimately, they are cheap and nasty.

The Committee's Enquiry in regard to housing devotes several chapters to the effect of the leasehold system, and the rating of land values upon working-class dwellings. I have not dealt with these, as they will doubtless be fully considered under the headings of "Tenure" and "Rating," especially as they do not, in my opinion, affect the question of housing to any marked degree.

The conclusion of my consideration of the matter is that much may still be done by the various authorities if they exercise to the full their existing powers. I would reiterate that what is wanted is not so much further legislative activities, but a wider use of those powers which already exist.

THE AMERICAN INSTITUTE OF ARCHITECTS AND THE AMERICAN PUBLIC.*

By Mr. R. CLIPSON STURGIS, President.

I CANNOT speak to you to-day except in the light of the trouble which casts its shadow over us all. Nations—people—individuals, to whom we owe much, whom we admire, whom we love, instead of working together for the advancement of art, science, and industry, and of, above all, our religious ideals, are testing the strength of modern armaments, and, on each side, giving freely of all that makes life precious and lovely—giving also life itself—for ideals. Instead of advancing side by side towards a common goal, they are attempting by force to establish ideals of national growth, of national prosperity, of national honour. One only of these is worth fighting for.

We stand outside—we look on. There must be something to be learned here. Are we ready and fit to receive the lesson?

Our debt to those nations in all that goes to make up our complex civilisation is enormous. In science, in research, in industry, in the arts, in the power to govern through sympathy, we have learned nearly all that we put into practice as a people, from these our fathers. Many nations have contributed to our national life, and to all we are closely bound by ties of blood and by debts of gratitude. Only through sympathetic understanding and mutual forbearance can we hope to work out a great future.

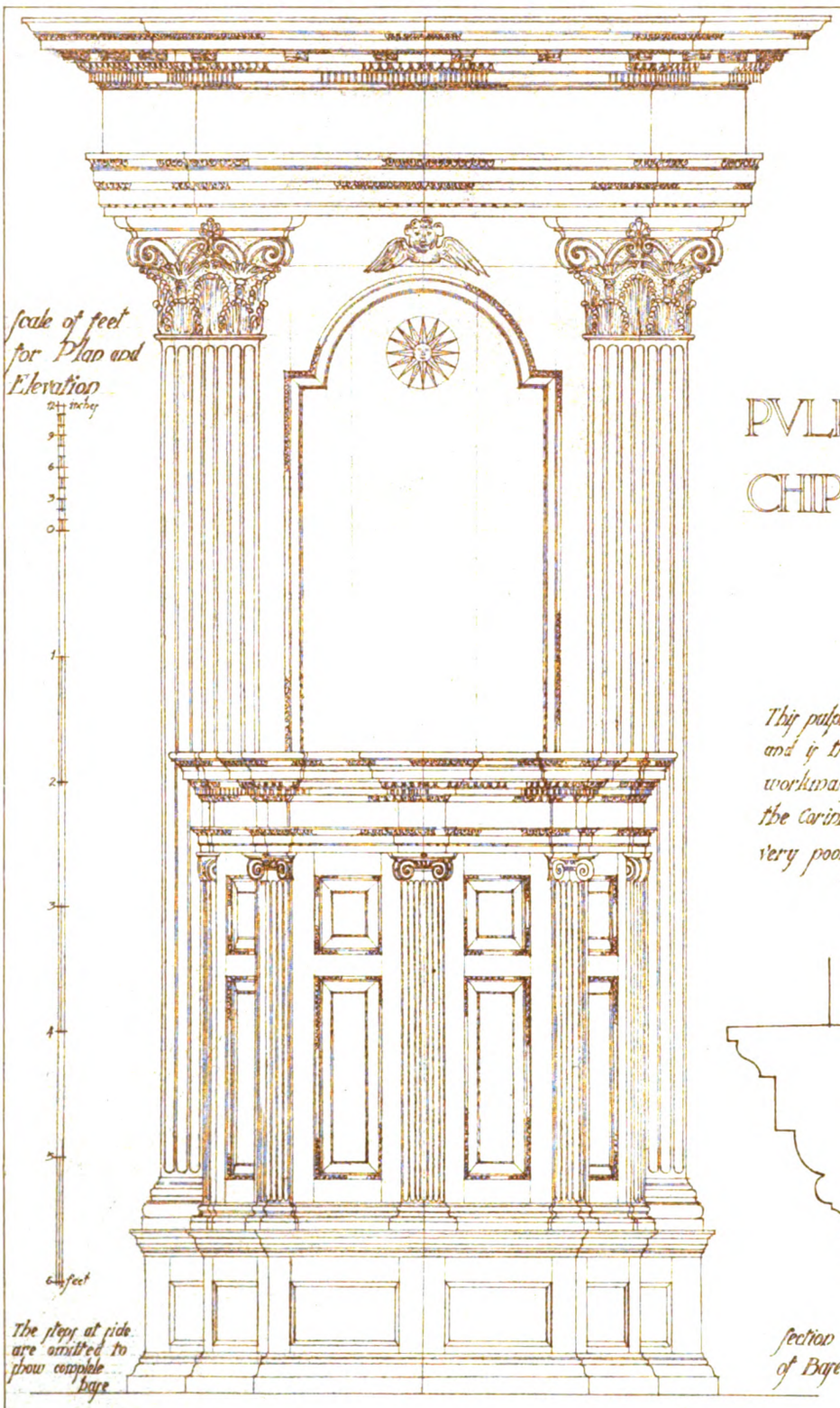
As this, our country, is a complex community, and yet indissoluble, so is architecture above all other arts the complex art, and at the same time the common art which belongs of necessity to every human being.

Architecture is not one art, it is many. Architecture is not an art only, it is also a science and an industry. For the fulfilment of all this many and different qualities are required. There are diversities of gifts, but one spirit. All the gifts must be exercised with the one spirit, the single aim towards the perfection of the final result as an expression of the fine arts, as an example of sound and perfect construction, as a practical solution of an economic problem.

It is because of the diversity of gifts required that an architect can never claim authorship for his work, as can the painter and sculptor; and for this very reason he must have sympathetic understanding and a willingness to work with others. Behind all must be integrity of purpose, uprightness, and absolute honour.

* An Address delivered to the American Institute of Architects, at the opening session of the Forty-eighth Annual Convention held at Washington, D.C.

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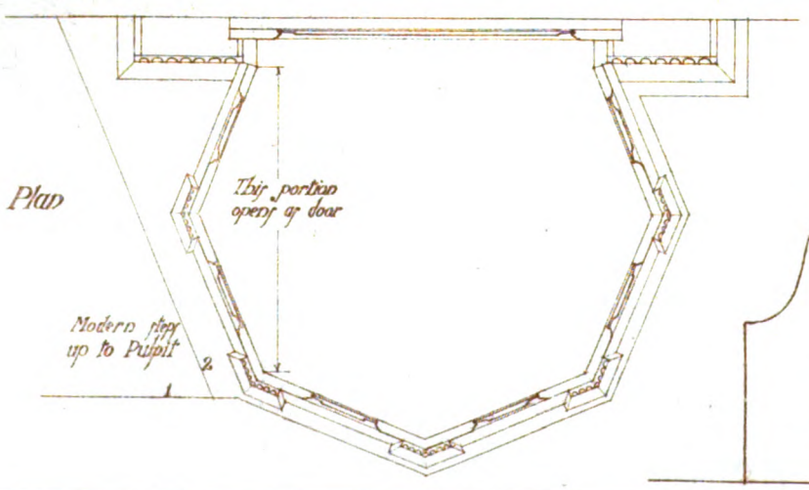


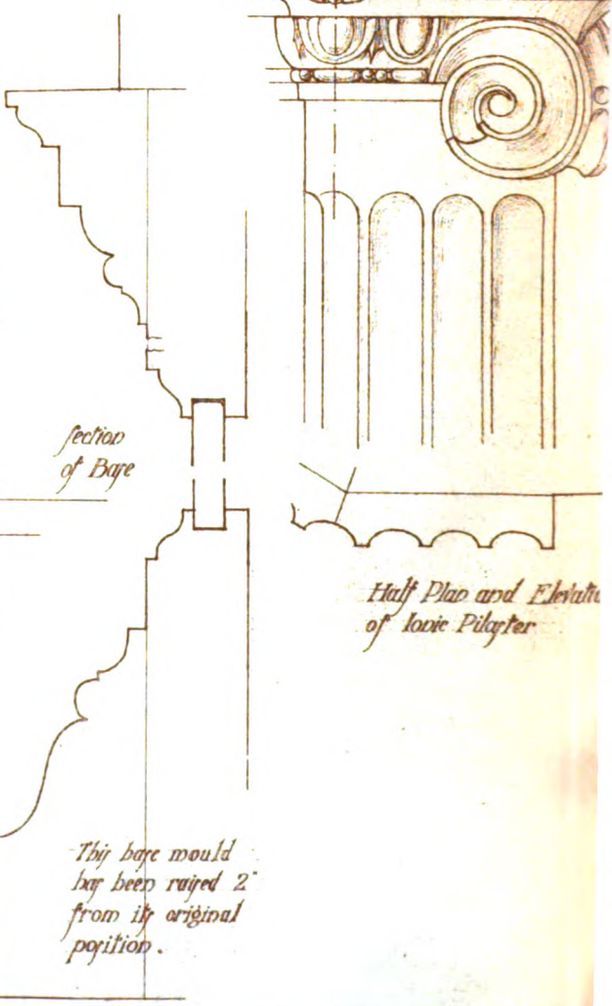
PULPIT in CHAPEL, CHIPCHASE CASTLE.

Measured and Drawn Jan. 1915.

"IMPROVER"

This pulpit is of eighteenth century date, and is throughout a good specimen of workmanship, with the exception of the Corinthian Capitals, which are of very poor form and execution.



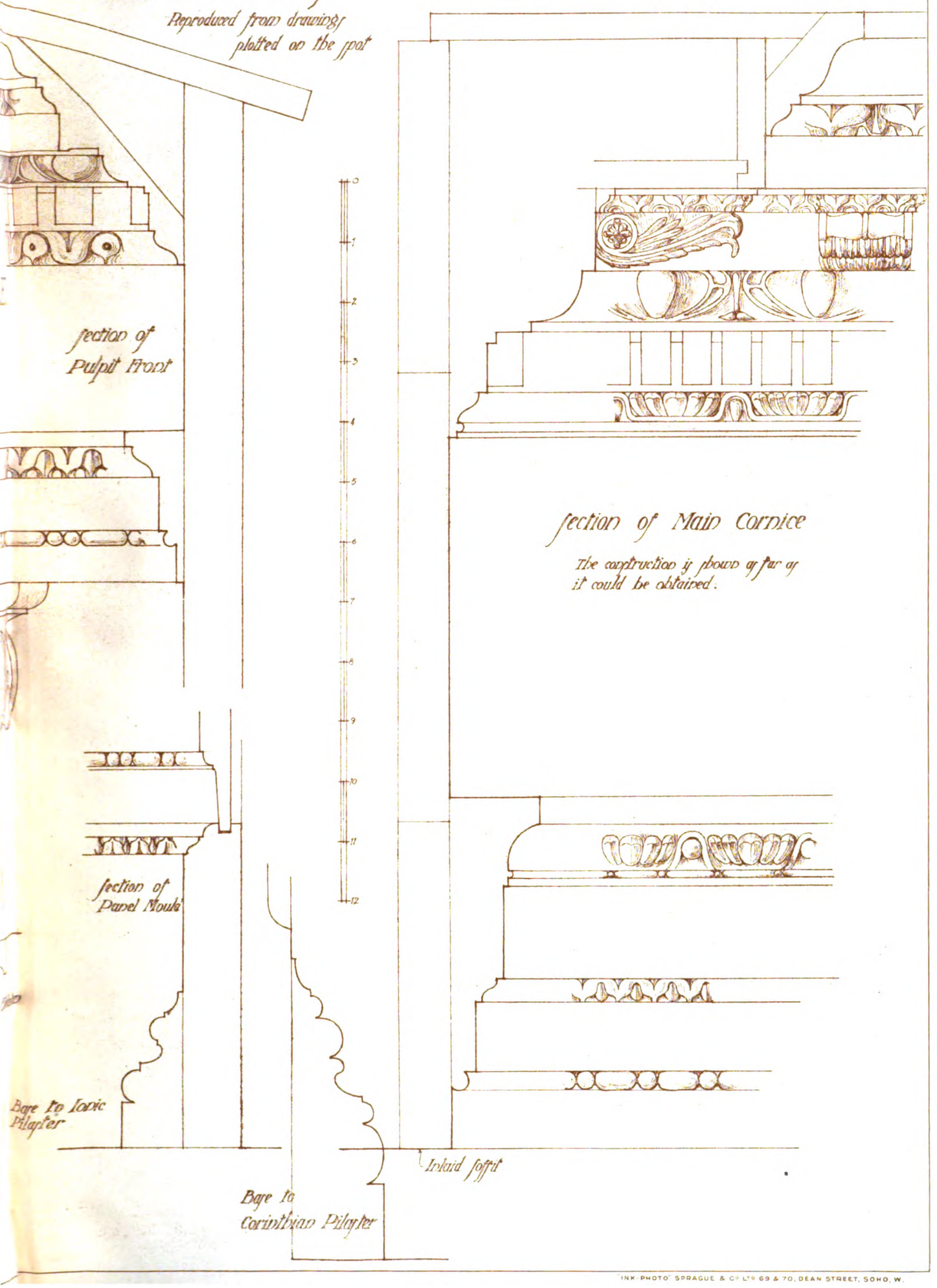


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April 30th 1915.

Full-Size Details

Reproduced from drawings plotted on the spot

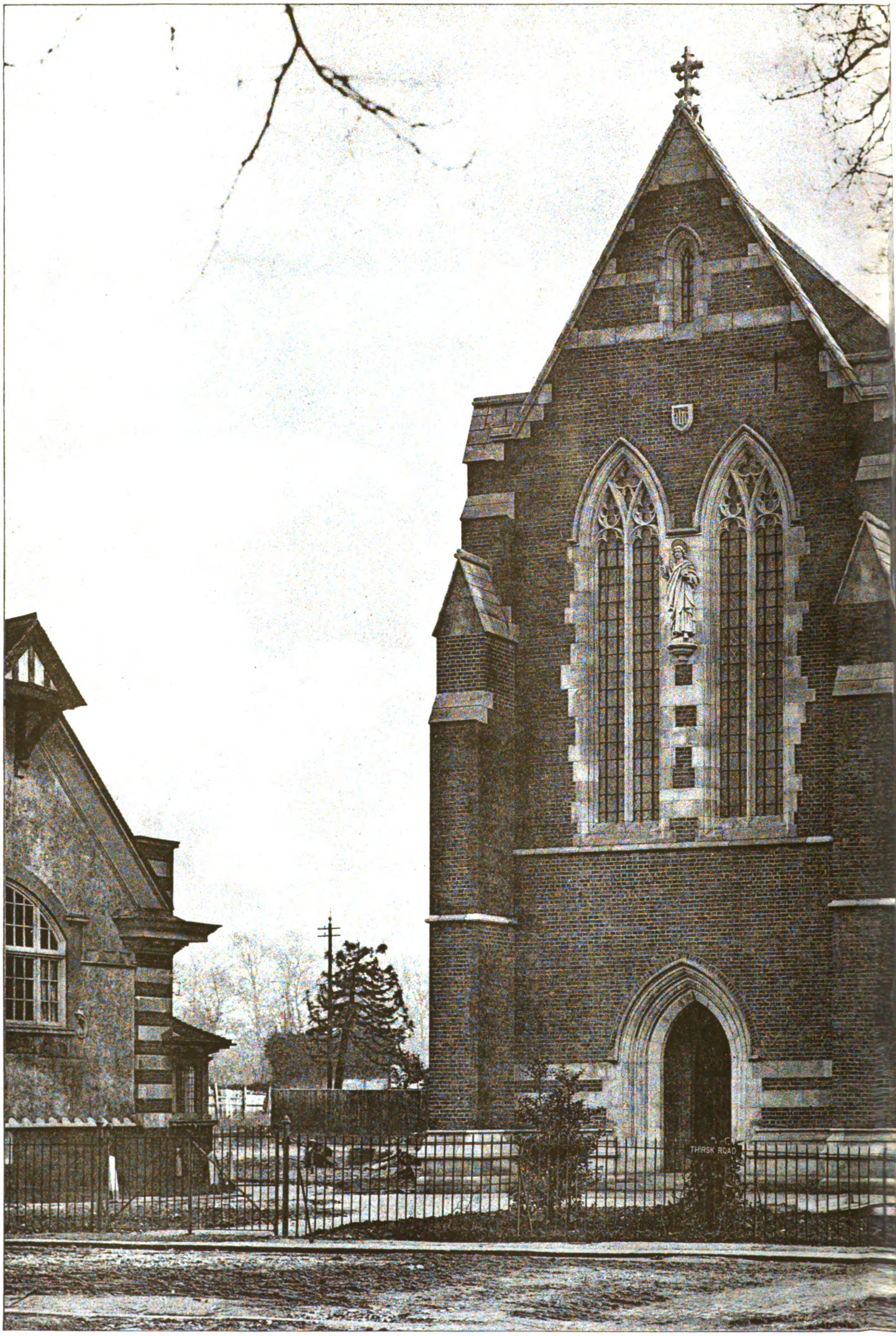


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Very specially, then, may we who practise this complex art turn with loving sympathy towards those to whom we, in especial, owe so much and try to learn the value of gaining our ideals in the right way. Force is the court of last appeal. Only when all else fails is force justified. To avoid the use of force every effort should be made to adjust differences by honestly trying to see both sides—to avoid differences by seeking first the points of agreement—by the exercise of sympathetic understanding. Long ago one who tried earnestly to take such an attitude said "That there should be no schism in the body, but that the members should have the same care one for another."

To insure the harmonious working together of all this Institute was established more than fifty years ago in a very small way in a single eastern centre. Twenty-five years ago it joined hands with the Western Association and so doubled the influence of both. Now it reaches across the continent, east, west, north, and south. Even now, however, its influence does not begin to be what its importance warrants. There is not a state, a town, or an individual that is not vitally interested in good architecture, the fine art, the sound construction, the good business investment; and yet our public bodies and our private individuals know very little about the subject, some know a little of one or another of the three phases, few know it in its completeness. It rests with individual members of the Institute, as well as with its organisation, to establish and maintain high standards in all.

The individual will always be looked upon as an interested, and therefore not unprejudiced, adviser; but the Institute is impersonal and disinterested, and here lies the real strength of the organisation.

In all that the Institute has done in the establishing of better standards it is the impersonal, unselfish attitude which has carried weight; and this will always be true if it is understood; but a public, used to expect interested motives, must be convinced that the aims of the Institute are disinterested, and this every individual can help to do.

Take four examples: The schedule of charges is established to insure the right kind of professional service by removing the temptation to poor, worse still, dishonest service, which an inadequate payment invites. The standard of service thus established is of real value to the owner.

The circular on competitions has been issued to insure the owner receiving what he has a right to expect when he institutes a competition—namely, a choice among the best that architects can offer. Under old systems a competition was a lottery for the owner as well as for the architects, and capable men and busy men did not care to enter. There were, and there always will be, applicants for those lottery tickets, but it is not to the advantage of the owner either to buy them or receive them for nothing.

The code of ethics has been established to set a standard which shall bind all members of the Institute and influence all practising architects to deal honestly and uprightly with the owner as well as with their fellow architects.

The committee on education has shown the unselfish attitude of the Institute in encouraging and fostering architectural education not only in the schools, where the well-to-do can afford to study, but in the ateliers and clubs where draughtsmen, unable to afford the schools, can prepare themselves for a fuller and better service.

In each of these four reverse side is claimed. The schedule —an attempt to fix high rates for the benefit of the members of an organisation. The competition circular, to limit competition and keep the work in our organisation. The code of ethics, to eliminate those who might otherwise encroach on our field. The education of the draughtsman, so that they will remain draughtsmen but be of more service to us. These latter are not the aims of the Institute, and every member in his practice and in his dealings with the owner will see that his example makes this clear.

The public constantly shows its belief in the low and interested point of view, and there are those, both outside the Institute and within its membership, who give colour to such belief by their attitude. We must face these facts and prove through our individual practice that we are a professional body with high standards, not a selfish trade organisation concerned only with its own interests.

In the Journal we have an extremely powerful instrument. It represents no individual but the Institute; it is the best means for disseminating knowledge among our members, and as its attitude is appreciated by the public it will surely mould public opinion. For the best service to the public and to the profession the Journal of the Institute should have a wide circle of readers.

For the same reason, that which in private practice is rightly deprecated as advertising, the use of the daily Press should be encouraged by the Institute. Matters of public and professional importance should, officially, through the Octagon (secretary) or through the Journal, be sent to the papers as matters of general interest. Thus only may we hope to be understood and to gain the co-operation of the public.

In architecture more than in any other profession co-operation is the keynote, and this must be based on mutual understanding. Those who work together and realise their interdependence must necessarily be humble. Neither one's successes nor, thank God, his failures are wholly attributable to the individual, and, knowing this, one will hesitate before judging. There are an infinite number of pitfalls for the architect, who is expected to know something of so many things. The things required of the architect are many and diverse. He is a creative artist—a master of building construction—an engineer and a business executive. In all his work the emphasis will come on one or another of these four. There are men who represent primarily each one. There is the shrewd business man, with his real estate and Press agents, his promoting activity, his judgment in selecting his men, draughtsmen and engineers, to carry through his work, construct, equip, design his buildings. There is the engineer, who, occupied primarily with problems of engineering, adds an architectural draughtsman as a side issue, and finds he can obtain and execute work in which planning, construction, and design are all as important as engineering. And, finally, there is the creative artist whose sole interest lies in his imaginative art, and who treats construction and business administration as a side issue. All these exist, and all are incompletely equipped, and render imperfect service as architects.

There are also men who might fairly be classed as eminent in more than one branch of the profession; but the man who can perform all the service rightly demanded of an architect, and do it all well, does not exist. For this reason architecture, in its most complete and perfect sense, must be composite work, in which all phases are considered and given their true importance. To determine fairly who may, in justice and right, term himself an architect is the problem that confronts those who have the duty of licensing architects. Possibly only those deserve the name who recognise clearly what they do not know, and have the judgment to put such work into the hands of men who do. A more careful consideration for the claims of others who, rightly or wrongly, practise architecture might lead to a different attitude towards qualification for membership in the Institute. A well-trained landscape architect who begins to practise architecture at once qualifies for a nomination for the Institute; an engineer who makes a partnership with an architect similarly qualifies. Many engineers practise architecture who in executive ability and knowledge of construction can render as effective service along many lines as a man who is without question an architect. These matters are worth considering, for they indicate that architecture is complex, demands for its perfection many minds, many qualities, and, above all, consideration of the claims of others.

As the Institute recognises and upholds complete and perfect service, so will the public, quick to appreciate good work, recognise what the Institute stands for. Let us not rest on promises, but let us press forward to performance.

As I began, so I cannot but close with the situation which dominates us to-day. If, in the march of events, we are destined to profit by the war, let us see to it that it is not materially, but spiritually; not in increased business and foreign trade, but in a clearer understanding of the absolute interdependence of the peoples of the world, and the obligation on all to serve his fellow-man. Our hope and prayer is that the glare of this war may enlighten our understanding and kindle our hearts, so that we may at the end have that sympathy which shall enable us to see only that which is true, that which is honest, that which is just; and give our help to establish a peace founded on forbearance and governed by the highest standards of integrity and honour.

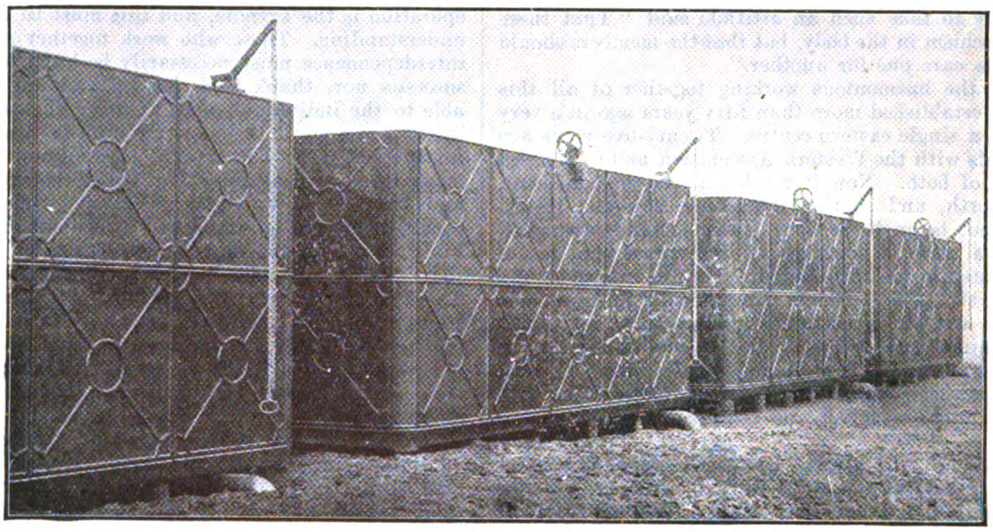
THE Grays Joint Sewerage Board have accepted the tender of Mr. C. Bentley, of Emsworth, Hants, amounting to £22,239, for carrying out a portion of a sewerage scheme. This decision is subject to the consent of the Local Government Board to obtaining the necessary money.

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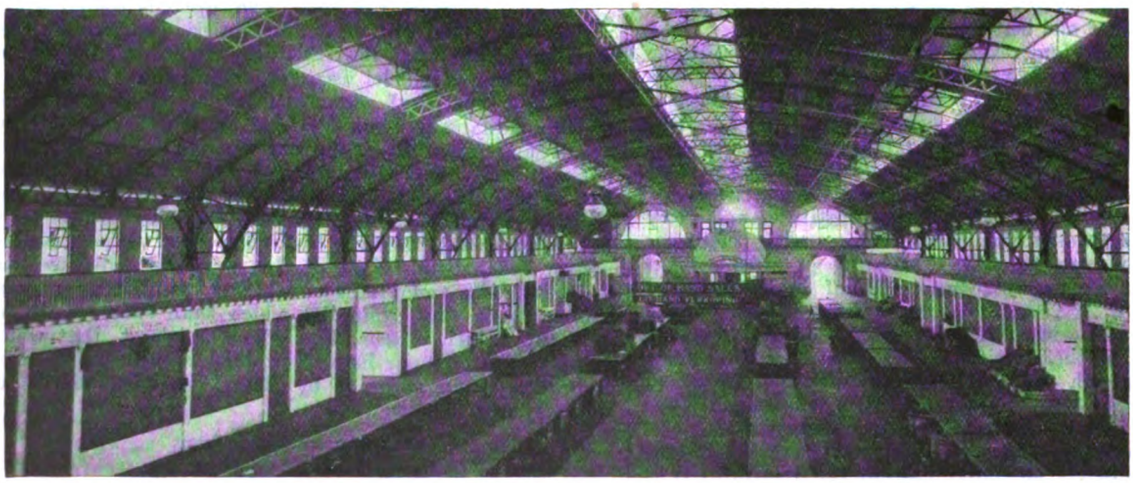
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Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Up-to-Date Daily.

Sir,—A daily paper with which I have already dealt in your issues of January 22 and February 19, published, on April 20, a view of Arras Town Hall as it was, and alongside an enlargement of one as it is to-day.

That is the paper which so exasperatingly mystifies its readers at times as to the localities of places illustrated but unnamed.

In the number for April 23 its "p.d.," uncensored, I am sure, makes "Eye-witness" refer to the "Ypres-Gommines" Railway line. The inhabitants of Comines, if they knew how their town's name had been so abominably mishandled, would be justified in taking reprisals on the real offender.—Yours faithfully,

Non-Ignotus.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

Buckinghamshire.

Amersham.—House, Oakway, for Mr. H. Kennard.
Ashley Green.—House, for Mr. W. A. Rew.
Bierton.—C.E. School: proposed alterations.
Chalfont St. Peter.—Houses, Orchard Grove, for Mr. E. W. Child.
Chesham Bois.—Schools, Copperkins Lane: additions, for Mr. W. Gomm.

Derbyshire.

Carr Vale.—Wesleyan Methodist School Chapel.
Clowne.—Offices, Rotherham Road, for R.D.C.

Durham.

Darlington.—Houses, Pirremont Road. Mr. J. Chilton, architect.
Houses, Kitchener Street. Messrs. Clark & Moscrop, FF.R.I.B.A., architects, Feethams.
Hartlepool.—Two houses, Park Road: alterations as children's homes, for B.G.

Essex.

Ilford.—St. John's Parish Hall, Seven Kings.
Southend-on-Sea.—Tuberculosis hospital. Mr. P. Brockbank, architect, County Chambers, Weston Road.

Hampshire.

Southampton.—No. 98 Above Bar Street: alterations. Mr. W. B. Hill, architect, 93 Above Bar.

Hertfordshire.

Baldock.—Twelve cottages, Clark's Lane. Council surveyor.

Isle of Man.

Douglas.—School, for the Higher Education Committee.

Isle of Wight.

Newport.—Post Office and shop, Medina Avenue, for Mrs. Cooper (of Shide).

Kent.

Lydden.—Wesleyan Church. Mr. S. Watson, architect, 55 Priest Hill, Caversham.
New Romney.—Offices and garage, for Mr. W. E. Ellis.

Lancashire.

Cadishead.—Congregational Church and School, Liverpool Road.
Heywood.—Condition Room, Cross Street, for the Heywood Spinning and Manufacturing Company, Ltd.
Motor garage, Manchester Street: extension, for Dr. Hutchon.
Lytham.—St. Cuthbert's Parish Hall (£2,600). Mr. F. Harrison, architect, 17 Agnew Street.
Morecambe.—Business premises, Lancaster Road. Mr. R. Jackson, architect, 32 Market Square, Lancaster.
Wigan.—The Empress Hall, Station Road. Mr. R. Pennington, architect, Malvern Chambers, Library Street.

Leicestershire.

Coalville.—Proposed cottage hospital.

Lincolnshire.

Skegness.—Garage, North Shore Road, for Mr. T. L. Kirk.

Monmouthshire.

Blackwood (near).—Business premises, Oakdale Village, for the Tredegar Industrial and Provident Society, Ltd.

Northumberland.

Newcastle-on-Tyne.—Warehouse, Waterloo Street. Messrs. Marshall & Tweedy, architects, 17 Eldon Square.

Nottinghamshire.

Bagthorpe.—Isolation Hospital: proposed extension (£4,500).
Nottingham.—Twenty-seven cottages and two blocks of tenements, Pennyfoot Street. City engineer.

Somerset.

Highbridge.—Joint isolation hospital for Burnham and Highbridge.

Surrey.

Kingston-on-Thames.—Congregational Church, Eden Street: school hall, gymnasium, &c. Mr. E. Carter, A.R.I.B.A., architect, 86 Eden Street. Messrs. Gaze & Sons, Ltd., contractors, Kingston Hall Road.

Sussex.

Hove.—"Erin Lodge," New Church Road: additions, for Mr. T. M. Nye.
Maisonettes, Palmeira Avenue. Mr. A. Carden, architect, 75 and 76 North Street.
Lancing.—Parish Hall (£1,250).

Warwickshire.

Coventry.—Two houses, Holbrook Lane, for Mr. T. Dagley.
House, Holbrook Lane, for Mr. A. J. Dobie.
Two houses, Lythall's Lane, for Mr. F. Fall.
Nine houses, Broomfield Place, for Mr. W. Morris.
Two houses, Belvedere Road, for Messrs. S. E. Cox & Co.
Three houses, Collingwood Road, for Messrs. Davies & Hewlett.
Eighteen houses, Madeira Road, for Messrs. W. H. Jones & Son.
Two houses, Ransom Road, for Mr. J. Boyce.
Eight houses, Wyley Road, for Mr. W. Griffin.
Nuneaton.—Needle factory. Messrs. Heaton & Walker, architects, 3 The Borough, Hinckley.
Wellesbourne.—Wesleyan Church. Mr. F. W. B. York, architect, Corn Exchange, Stratford-on-Avon.

Worcestershire.

Dudley.—Mission Room, Darby End, for Mr. D. Morby.

Yorkshire.

Bingley.—Bowling Green Mills: additions. Messrs. Nunns & Bracewell, architects, Bank Chambers.
Bridlington.—House, Mayfield Road. Messrs. Blackford & Sykes, architects, 15 Prospect Street.
Houses, James Street. Mr. J. R. Earnshaw, architect, Carlton House, Wellington Road.
Golcar.—Shop premises, Leymoor Road. Mr. A. Shaw, architect, Knowl Road.
Halifax.—Houses, West Vale. Messrs. M. Hall & Son, architects, 1 Harrison Road.
Huntington.—Four houses, for Mr. G. Barton.
Loftus.—Proposed Parish Hall (£2,000).
Middlesbrough.—William Fallow's School, Grove Hill: rebuilding. Mr. J. Forbes, architect, 43 Albert Road.
Middleton Tyas.—"Morris Grange": additions. Messrs. Kellett & Clayton, architects, High Row Chambers, Darlington.
Rotherham.—Business premises, Fitzwilliam Road, for the Masbro' Equitable Pioneers' Society, Ltd.
House, Erskine Road, for Mr. H. James.
Proposed technical school.
Shipton.—Proposed E.R. smallpox hospital.
Threshfield.—Houses. Mr. J. W. Broughton, architect, 19 High Street, Skipton.

WALES.

Forden.—Proposed forty-eight houses, for the Welsh Housing Pioneer Association.
Llechryd.—Joint isolation hospital, for the Rhymney and Tredegar Councils.
Merthyr Tydfil.—Great Western Hotel: alterations. Mr. T. E. Rees, architect, Bank Chambers.

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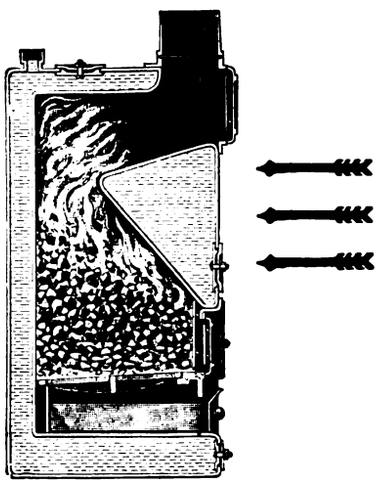
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WALES—*continued.*

Ponthenry.—Twenty houses, for the Colliery Company. Mr. H. C. Portsmouth, architect, Llanfair Buildings, Swansea.

Tonypandy.—Business premises, Dunraven Street. Mr. J. T. Jenkins, architect, Fairfield House, Porth, Rhondda.

Wrexham.—Houses, Madeira Hill. Mr. F. A. Bevan, architect, High Street.

SCOTLAND.

Aberdeen.—Business premises, Albert Quay: alterations. Mr. G. B. Mitchell, architect, 148 Union Street.

No. 71 College Street: additions, for Messrs. A. Pirie & Sons, Ltd.

Broadford Works, Maberley Street: additions, for Richards, Ltd.

Premises, Littlejohn Street, for the University.

Coatbridge.—Works, Stobcross Street: extensions, for the Stobcross Nut, Bolt, and Rivet Company, Ltd. (£3,200).

Cowdenbeath.—Board school, Barclay Street (£10,000).

Edinburgh.—Sorting office, West Park Place.

Glasgow.—S.A. Citadel, Whiteinch.

IRELAND.

Frenchpark (near).—Dispensary and dispenser's house, Corskeagh, for the Castlerea Guardians. Mr. M. J. Leech, architect.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 4,941. Feb. 25, 1914.—J. R. Quain, 17 Victoria Street, Westminster, S.W. Electric heaters.

5,013. Feb. 26, 1914.—James Self, 87 Harrow Road, Leytonstone. Valves.

5,441. March 3, 1914.—H. J. Burgess, 46 Preston Road, Brighton. Apparatus for closing doors and gates.

6,323. March 12, 1914.—James McHardy, 5 Homedale Road, Stamford Hill, N., and R. H. McHardy, The Briars, Torrington Park, Finchley, N. Fanlight openings and the like.

8,219. April 1, 1914.—E. V. Dunn & H. D. Dunn, Radway Green, Haslington, Cheshire. Ovens for firing earthenware, sanitary ware, bricks, and like articles.

9,180. April 11, 1914.—S. R. Wheeler & Samuel Wheeler, Ltd., Soho Boiler Works, Smethwick. Panels for building walls of ovens, drying stoves, fuel economisers, water or gas heaters, and the like.

9,695. April 20, 1914.—M. M. Dessau, 60 London Wall, E.C. Paving of roadways and the like.

15,496. June 29, 1914.—James Weeks, 41 Old Town Street, Plymouth. Screw-down valves.

16,959. July 17, 1914.—H. S. Valentine, 91 Fotheringay Road, Maxwell Park, Glasgow. Kitchen ranges.

17,595. July 24, 1914.—Dated under International Convention July 31, 1913. A. M. Giuliani, 80 Grande Rue, Chateau Thierry, Aisne, France. Cooking and hot-water heating apparatus.

20,911. Oct. 13, 1914.—J. B. Smith, 46 Dubuque Street, Manchester, New Hampshire, U.S. Automatic fire and temperature alarms.

24,833. Dec. 31, 1914.—M. E. Venturino, 24 College Street, London. Apparatus for mechanically solving plane triangles.

Any of the above specifications may be obtained from J. D. Roots & Co.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 3,048.—February 5, 1914. Pipes and method of joining same. H. G. Nicholson-Lailey, of Kamari, Bythesea Road, Trowbridge.—This invention relates to an improvement in that method of joining pipes together in which flanges are provided on the ends of the pipes, the said flanges having in them an undercut groove or recess to receive a binding agent. The main object of the invention is to enable joints to be so constructed that the pipes and the joints are securely held against both lateral and longitudinal displacement and also against internal pressure without the use of collars or the like. In this invention the pipe, conduit, or the like has an undercut flange at each end, and the undercut or groove has walls both of which are inclined at an angle to the longitudinal axis of the pipe and meet one another, or when continued meet one another at an acute angle whereby when the binding agent has been placed into the annular space formed by the undercuts or grooves, the pipes or conduits are prevented from moving in a longitudinal direction relative to one another and in a lateral direction relative to one another. The binding agent, say any suitable metal, cement, cement mortar, cement grout, bitumen, or other suitable substance, whether in a liquid, semi-liquid, or

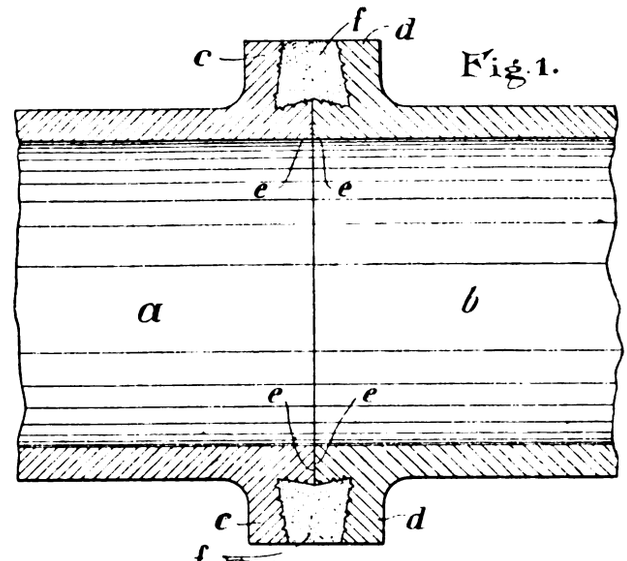


Fig. 1.

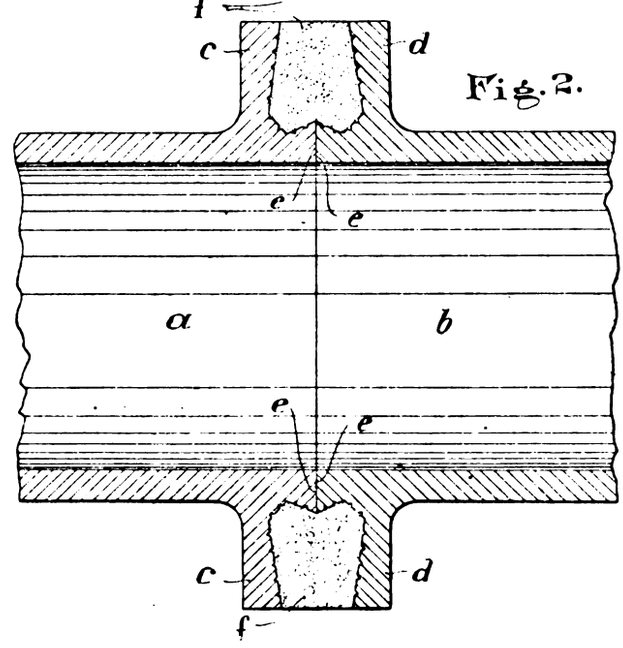
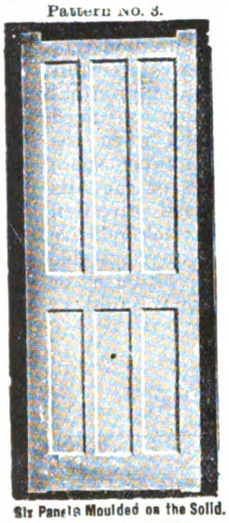


Fig. 2.

solid state, can be poured or forced or trowelled so as to fill the groove or recess. Fig. 1 illustrates the ends of the two pipes *a* and *b* having flanges *c* and *d* respectively, in both of which a groove is formed to receive the binding agent *f*. Fig. 2 likewise illustrates the ends of two pipes substantially the same as those shown in fig. 1, but with grooves of different shape. When laying the pipes they are first brought into alignment in the usual way, so that the ends *e* of the pipes contact with one another all round their circumference, and a binding agent such as lead or any other metal, cement or bitumen, is poured or forced into the dove-tail shaped cavity, which when set forms a rigid and strong keying ring *f*. When the binding agent is poured into the cavity in the liquid state a temporary structure is provided to prevent the agent from leaving the cavity. The structure is removed when the agent has set. In both these examples it will be observed that the shape of the grooves is such that it is impossible to individually shift the pipes in any direction without breaking the pipe or the binding agent. February 10, 1915.

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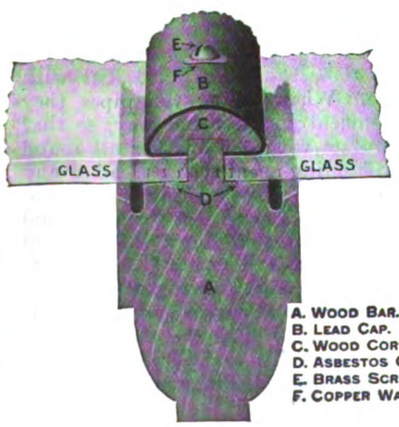
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THE
Architect and Contract Reporter.
FRIDAY, APRIL 30, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

⁂ *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—The Louth County Council invite architects to submit designs in competition for new county offices, to be erected in Dundalk, and have appointed Professor William A. Scott, A.R.I.B.A., F.R.I.A.I., A.R.H.A., to act as their assessor. Conditions of competition may be obtained from the county secretary on receipt of a deposit of two guineas, which will be returned on receipt of a *bona-fide* design, or the return of the conditions within seven days. Mr. Charles McAlester, county secretary, Courthouse, Dundalk.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

BARNSTAPLE.—May 8.—For erection of a dwelling-house in Pilton Street, for the Trustees of Pilton United Charities. Mr. J. C. Southcombe, P.A.S.I., architect, Bridge Buildings, Barnstaple.

BATTLE.—May 13.—For certain alterations at the nursery, Union Workhouse, Battle, for the Guardians. Mr. F. G. Ticehurst, clerk, Battle.

CAMPDEN.—For the several works in additions and alterations to house in the High Street, for Mr. Herbert Wixey. Mr. Wixey, London City and Midland Bank, Campden, or Mr. W. L. Lissaman, architect, Islay House, Broadway, Worcs.

CARLISLE.—May 4.—For the pulling down and clearing of the site of certain property now under demolition order of the Housing, Town Planning, &c., Acts, Finkle Street, Twentyman's Court; also for the demolition of property belonging to the Corporation in Twentyman's Court, Finkle Street, and for certain constructional works in connection therewith, for the Corporation. Mr. H. C. Marks, M.I.C.E., city engineer and surveyor, 36 Fisher Street, Carlisle.

CASTLEFORD.—For erection and completion of sale-room for Mr. J. G. Stephen in Bank Street. Mr. C. L. Waite, architect, Prospect Chambers, Castleford.

CHESTERFIELD.—May 11.—For erection of a ward to accommodate twenty beds at the Penmore Hospital. Mr. J. Middleton, law clerk, 24 Gluman Gate, Chesterfield.

COCKFIELD.—May 3.—For mason, joiner, plasterer, slater and plumber work in connection with the erection of a new farm labourer's cottage at Gordon House Farm, near Cockfield, Durham. Architect's Office, Streatlam Home Farm, Darlington.

DARTON.—May 10.—For building boundary walls and execution of other works in connection with the enlargement of Gawber Churchyard, for the Darton Urban District Council. Mr. S. Wilkinson, surveyor, Council Offices, Darton, Yorks.

DENT.—For building farm buildings at Corn Close Farm, Dent, Kendal, for the Trustees of the late R. Burra. Mr. J. Stalker, M.S.A., architect, Kendal.

EARBY.—May 3.—For the plasterer's work in connection with police station and constables' houses at Earby, near Skipton, for the West Riding Standing Joint Committee. Mr. P. O. Platts, West Riding architect, County Hall, Wakefield.

EBBW VALE (MON.).—May 12.—For erection of forty cottages on the Beaufort Estate, for the Fitzroy Avenue Building Club, and for the construction of roads and sewers. Deposit £2 2*s.* Messrs. Vaughan-Richards & Williams, architects and surveyors, Imperial Chambers, Ebbw Vale.

FAREHAM.—May 12.—For alterations and additions to the school buildings, for the Governors of Price's School. Deposit £2 2*s.* Mr. W. Cobbett, architect, West Street, Fareham, Hants.

FINCHLEY.—For the annual works and repairs to Council schools, to be carried out during the summer holidays, for the Finchley Education Committee. The Secretary, Education Office, Church End, Finchley.

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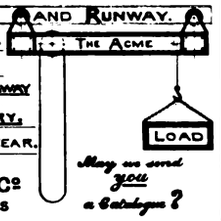
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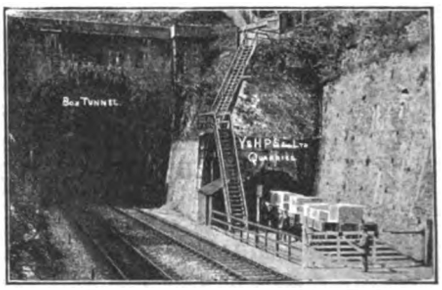
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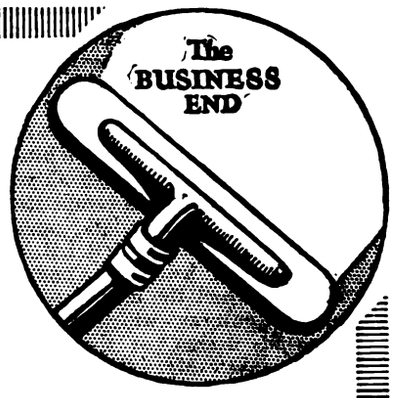
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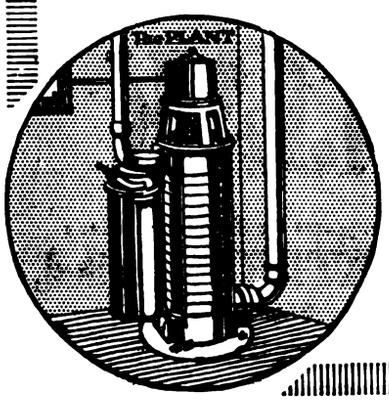
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HALIFAX.—May 10.—For work required in the erection of machine works and offices at Mile Cross. Send names by May 10, to Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HUDDERSFIELD.—May 7.—For the various works (all trades) required in extension of the filter house at Longwood reservoirs, for the Corporation. The Waterworks Engineer, Town Hall, Huddersfield.

HULL.—May 6.—For erection of offices, wheel shop, and alterations to workshops, &c., engine sheds, Dairycoates, for the North-Eastern Railway Company. Plans and specification may be seen and quantities and further information obtained upon application on or after the 20th inst. to Mr. Arthur Pollard, company's architect, York. Duplicate plans may be seen on application to the Stationmaster, Paragon Station, Hull. (See advertisement.)

IRELAND.—May 3.—For the construction of an overline bridge and approaches at Finaghy, near Belfast, for the Great Northern Railway Co. (Ireland). Deposit £2 2*s*. The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

KELHAM.—May 3.—For residence, &c., to be built at Kelham, near Newark. Separate tenders are required—viz.: (1) builders' work; (2) plumbers' work. Messrs. Sheppard & Lockton, M.S.A., Licentiate R.I.B.A., architects and surveyors, Bargate, Newark.

LONDON.—May 6.—For the work of covering-in with corrugated-iron sheets and the provision and erection of sliding doors to the sides and ends of an iron shed in the Council's depôt at Cobbett Street, Clapham Road, S.W., for the Lambeth Borough Council. The Borough Engineer's Office, Lambeth Town Hall, Brixton Hill, S.W.

LONDON.—May 10.—For the foundations and concrete retaining wall in connection with the new General Post Office East, London, E.C., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s*. H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—May 13.—For taking down cornice and other work at their Newington Institution, Westmoreland Road, S.E., for the Guardians of the Poor of the Southwark Union. Deposit £2. Mr. A. Saxon Snell, F.R.I.B.A., architect, 9 Bentinck Street, Manchester Square, W.

NORMANTON.—May 10.—For erection of professionals' house and club conveniences, Snydale Road, Normanton, for the Golf Club. Mr. A. Hartley, architect, County Chambers, Castleford.

QUEENSBURY.—For the various works required in the erection of a Liberal club at Amblergate, Queensbury, Yorks. Mr. H. F. Sharp, architect and surveyor, Queensbury, near Bradford.

SANDBACH.—May 6.—For erection of Primitive Methodist chapel and school at Malkin's Bank, near Sandbach. Messrs. Alfred Price & Sons, architects, Sandbach.

SCOTLAND.—May 5.—For the mason, steel, joiner, plaster, and tile works of internal alterations to their office premises in Bell Street, for the Dundee Combination Parish Council. Mr. T. M. Cappon, F.R.I.B.A., architect, 32 Bank Street, Dundee.

SCOTLAND.—May 13.—For the following works required in connection with erection of sanatorium and children's home at Southfield, near Mearns—viz.: (1) mason, brick, and concrete works; (2) steelwork; (3) slater and rough cast works; (4) plumber work; (5) plaster work; (6) asphalt work; and (7) tile work—for the Glasgow Corporation. The Office of Public Works, Cochrane Street, Glasgow.

STANNINGTON.—May 1.—For erection of new farm colony buildings. Send applications by May 1 to Mr. C. F. Murphy, architect, &c., Lloyds Bank Chambers, Morpeth.

SUTTON-IN-ASHFIELD.—May 6.—For erection of a post office in Brook Street, for the Urban District Council. Deposit £2 2*s*. Mr. Walter Burn, A.M.I.C.E., surveyor to the Urban District Council, Sutton-in-Ashfield.

SWANTON MORLEY.—May 10.—For the building of a school at Swanton Morley, Norfolk. Send names and 10*s*. 6*d*. deposit by May 10 to Mr. J. E. Burton, architect, 11 Bank Plain, Norwich.

TIDESWELL.—May 14.—For proposed extension of Church of England schools. The Rev. T. Rogerson, vicar, Tideswell, Derbyshire.

TINGLEY (YORKS.).—May 3.—For the various works required in erection of residence, Bradford and Wakefield Road, for Mr. A. Cowling. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Queen Street, Morley, and 1 Basinghall Square, Leeds.

WALLSEND.—For erection of lavatories in connection with their club-rooms, for the Wallsend Industrial Co-operative Society, Ltd. Mr. F. Robertson, secretary, Wallsend.

WELLINGBOROUGH.—May 12.—For erection complete of a steel Dutch barn at the Council's sewage farm, "Irthlingborough Grange," for the Wellingborough Urban District Council. Mr. R. S. Henshaw, engineer and surveyor Council Offices, Wellingborough.

WHITBY.—May 8.—For the construction of a timber-framed lifeboat house covered with corrugated steel sheeting, a reinforced concrete sub-structure, slipway and approach thereto, near the Fish Pier, Whitby Harbour, in the County of Yorkshire, upon the foreshore and sea bed thereat, for the Royal National Lifeboat Institution. Deposit £1. Mr. John W. Foster, Local Hon. Secretary, Harbour Department, Urban District Council Offices, Whitby, or Messrs. Douglass, Lewis & Douglass, engineers and architects, 15 Victoria Street, Westminster, London, S.W.

WHITLEY BRIDGE.—May 1.—For erection and completion of an engineer's workshop at the Pontefract Corporation's Pumping Station, Roall, Whitley Bridge. Mr. J. E. Pickard, borough surveyor, Municipal Offices, Pontefract.

WINDSOR.—May 10.—For carrying out alterations to lavatory accommodation at the Workhouse, Old Windsor, for the Guardians. Mr. J. E. Gale, clerk, 3 Sheet Street, Windsor.

TENDERS.

HALIFAX.

For the execution of the work required in erection and completion of tramway waiting-room and tool-house, Stump Cross, for the Corporation Tramways Committee. Mr. J. LORD, M.I.C.E., borough engineer, Halifax.

Accepted tenders.

Edwin Naylor & Sons, Halfax, mason work	£180	0	0
Charles J. Norvell, Halifax, joiner's work	53	16	11
Rushworth & Firth, Halifax, slaters' work	16	7	2
Alph Pollard, Halifax, plumbing, &c.	19	2	1

LONDON.

For provision of two 8,000-kw. turbo-generators at the Greenwich Generating Station, for the London County Council.

Dick, Kerr & Co., Ltd.	£68.100	0	0
Brush Electrical Engineering Co., Ltd.	67,062	0	0
Willans & Robinson, Ltd.	64,620	0	0
Ditto (alternative)	65,619	0	0
Ditto (alternative)	66,795	0	0
Ditto (alternative)	67,442	0	0
Escher, Wyss & Co.	64,016	0	0
Ditto (alternative)	66.311	0	0
BRITISH WESTINGHOUSE ELECTRIC AND MANUFACTURING CO., LTD., Manchester (*accepted*)	62,003	0	0
Fraser & Chalmers, Ltd.	58,012	0	0
Ditto (alternative)	59,709	0	0
Ditto (alternative)	63,816	0	0
J. Howden & Co., Ltd.*	55,161	0	0
Ditto (alternative)*	56,720	0	0
Maschinenfabrik Oerlikon	57,600	0	0
British Thomson-Houston Co.*	51,070	0	0
Cole, Marchent & Morley, Ltd., Bradford*	15,313	10	0
Chief officer of tramways' estimate	54,532	0	0

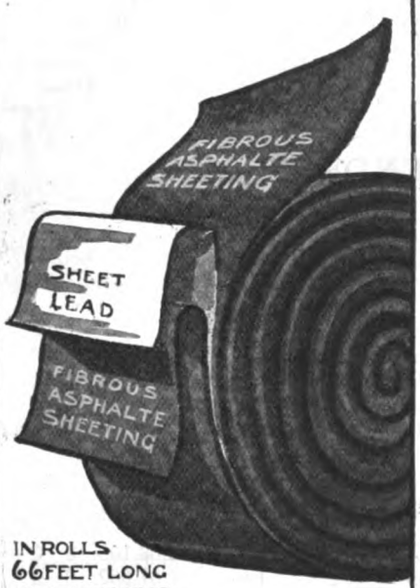
* Incomplete tenders.

For the erection of dwellings on the first section of the Tabard Street area, for the London County Council.

Longley & Co.	£31,864	0	0
Holliday & Greenwood	31,253	0	0
J. Greenwood, Ltd.	30,870	0	0
Brand, Pettit & Co.	30,307	0	0
Holloway Bros. (London), Ltd.	29,695	0	0
Holland, Hannen & Cubitts	29,475	0	0
C. Wall, Ltd.	28,923	0	0
Ashby & Horner	28,700	0	0
Garrett & Son	28,645	0	0
F. & T. Thorne	28,443	0	0
Monk	27,645	0	0
Lawrence & Son	27,572	0	0
Wallis & Sons	27,334	0	0
Allen Fairhead & Son	26,835	0	0
Godson & Sons	26,796	0	0
ROWLEY BROS., Wood Green (*accepted*)	26,422	0	0
Architect's estimate	27,995	0	0

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LONDON—*continued.*

For paving and other works in connection with the Southampton Row improvement between Bloomsbury Place and Vernon Place, for the London County Council.

Bloomfield	£6,378	6	9
Mowlem & Co.	6,270	1	6
Anderson	6,245	8	4
Ford	6,233	14	2
HOWARD FARROW, Brixton (*accepted*)	5,983	9	1
Chief engineer's estimate	6,464	3	0

For the erection of a temporary workshops building at the chief station of the fire brigade, for the London County Council.

Monk	£1,325	0	0
Godson & Sons	1,285	0	0
C. Wall, Ltd.	1,200	0	0
J. McManus	1,190	0	0
J. C. MATHER, Northampton Street, W. (*accepted*)	1,100	0	0
Architect's estimate	1,450	0	0

For execution of roadwork in connection with tramway construction in East Hill, Wandsworth, for the London County Council.

Stark & Sons	£6,700	0	0
Manders & Co.	5,903	0	0
Dick, Kerr & Co.	5,867	0	0
Griffiths & Co.	5,692	0	0
Coles	5,591	0	0
J. MOWLEM & CO., LTD., Westminster (*accepted*)	5,415	0	0
Wimpey & Co.	5,198	0	0
Chief engineer's estimate	5,400	0	0

For conversion of the Bayswater fire sub-station into a full station, for the London County Council.

Higgs & Hill	£6,900	0	0
L. H. & R. Roberts	6,377	0	0
Smith & Son	6,171	0	0
King & Son	6,087	0	0
Monk	6,040	0	0
Coxhead	5,997	0	0
J. & C. Bowyer	5,993	0	0
Wallis & Sons	5,975	0	0
Triggs & Co.	5,850	0	0
Maddison	5,539	0	0
Holloway	5,493	0	0
G. Godson & Sons, Kilburn Lane, W.	5,345	0	0
Ditto (alternative, *accepted*)	5,220	2	11
Architect's estimate	5,600	0	0

MORECAMBE.

For erection of new shop and premises, Lancaster Road, for the Lancaster and District Co-operative Society, Ltd. Mr. R. JACKSON, Licentiate R.I.B.A., architect, Lancaster.

Accepted tenders.

F. Schofield, Heysham, mason	£415	0	0
Thompson & Morris, Lancaster, joiners	327	0	0
Calvert & Heald, Lancaster, plumbers	144	0	0
T. & J. Till, Lancaster, slaters	48	13	0
W. H. Greenep, Lancaster, painter	19	1	2

WELLINGBOROUGH.

For the erection of a shoe factory and houses in Park Road, for the Poplar Estate Co., Ltd. Mr. R. J. WILLIAMS, architect, Kettering.

Factory.

Brown & Son	£7,397	0	0
Phillips & Slow	7,390	0	0
Smith, Edmunds & Co.	7,385	0	0
Smith & Bunning	7,375	0	0
Adams	7,320	0	0
Marriott	7,299	0	0
Drever & Son	7,148	0	0
Hacksley Bros.	7,120	0	0
G. HENSON & SON, Wellingborough (*accepted*)	6,975	0	0

Houses.

Adams	1,670	0	0
Phillips & Slow	1,220	0	0
Smith, Edmunds & Co.	1,216	0	0
Smith & Bunning	1,210	0	0
Brown & Son	1,198	0	0
Marriott	1,180	0	0
G. HENSON & SON (*accepted*)	1,156	0	0
Hacksley Bros.	1,148	0	0
Drever & Son	1,128	0	0

SOUTH BERSTED.

For rebuilding the White Horse, South Bersted, near Bognor. Messrs. WHITEHEAD, architects and surveyors, Chichester and Bognor.

Booker & Son	£2,580	0	0
Seymour	2,513	0	0
H. W. BRIGGS (*accepted*)	2,170	0	0
Start	1,955	9	0

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SOME RECENT THEORIES OF VENTILATION.*

THIS paper was devoted to a consideration of some recent theories of ventilation, in so far as they affect, or are likely to affect in the future, the design and construction of Plenum systems of warming and ventilation, together with an attempt to define the conditions or circumstances which have in the past contributed in many cases to the partial or complete failure of this particular system.

The standard of purity of air which has served ventilating engineers in the past has, within the last few years, been demolished. In face of the experiments and researches of Dr. Hill and other eminent physiologists, we are bound to accept the fact that within reasonable limits neither the proportion of CO_2, the reduced percentage of oxygen, nor exhalation of organic chemical matter, have any material effect on the human organism, and that, provided means are taken to circulate the air at a proper degree of humidity, and so keep down the body temperature by evaporation from the skin, no injurious results would take place.

But however misguided, from a physiological standpoint, we may have been in the past in taking CO_2 as a standard, it must be granted that the endeavour to keep the percentage within specified limits has been a step in the right direction, inasmuch as it has usually led us to provide from 2,000 to 3,000 cubic feet of fresh air per person.

There is no doubt that of late years ventilating engineers have recognised that, apart from the volume of air supplied, its conditioning and proper distribution are matters of the greatest moment. The comparative failures of ventilating systems recorded in the past would, if investigated, probably be found to be due to neglect of these important considerations, coupled with faults in design and constructional details.

One of the first considerations in the design of a Plenum installation is, of course, the selection of a suitable position for the fresh air intake.

As to whether fresh air should be taken from the roof or near the ground level opinions differ, but I regard it as a question that must to a great extent depend upon local conditions. If the building is situated in the open country the question requires but little consideration. It is, however, an important matter when dealing with buildings in industrial centres. In such cases, if possible, the intake should be situated about 10 ft. to 12 ft. above the ground level, and only as a last resource should it be placed at the roof level. When it is considered that within a comparatively small area hundreds of chimneys may be belching forth unconsumed carbon and an almost equal number of soil pipe ventilators discharging foul air, it must lead us to doubt whether the upper strata of air is so pure as that at a lower level.

In all large towns and manufacturing districts efficient filtration of the air supply is a matter of the greatest importance, and the success or otherwise of a system depends to a much larger extent than is generally supposed upon the provisions made in this connection. In all installations of any importance it is necessary to provide a dry filter as well as a water spray eliminator. To depend upon either singly is, in my opinion, likely to lead to trouble.

One of the questions frequently asked in the course of discussions on ventilation which has not received a satisfactory answer is, "Why is it that air which has been warmed by a battery and forced into a building loses its crispness?"

* Extracts from a Paper entitled "Some Recent Theories of Ventilation considered in their Relation to Present-day Practice," by Mr. E. Herring (Vice-President), read at the annual general meeting of the Institution of Heating and Ventilating Engineers in London.

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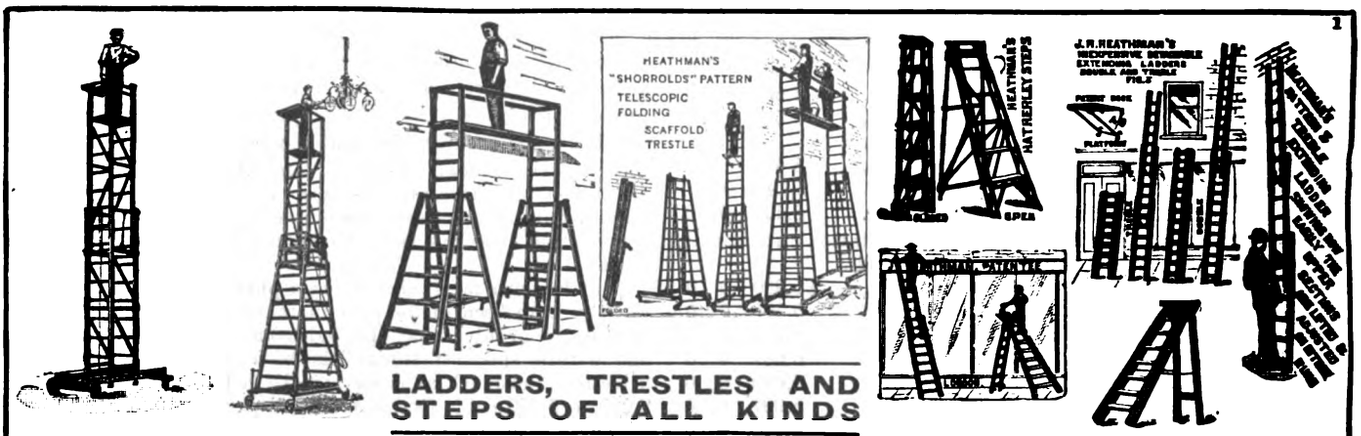
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An investigation of the probable causes, although it may not cover the whole ground of complaint, is desirable, and may possibly lead to better results in future.

Probably one of the causes of the lack of crispness arises to a large extent from the fact that, in order to reduce the initial cost to a minimum, installations are usually designed on the principle of distributing a comparatively small volume of air at a high temperature, instead of, as should be the case, a large volume at a low temperature.

It is, of course, well understood that the air supplied by a Plenum system pure and simple must be introduced to a room at such a temperature that it carries with it a sufficient number of B.T.U.'s not only to compensate the heat losses through windows, walls, roof, &c., but also to ensure that when these losses have been made good the air in its passage to the outlets does not drop below the temperature at which it is required to keep the room. It therefore follows that the smaller the volume of air delivered the higher must be its initial temperature, and it will also be seen that in cases where the heat losses have a high ratio in respect to the volume of air, this initial temperature may be very high indeed. On the other hand, it is equally evident that the larger the volume of air supplied the lower will be the required initial temperature, and it is in this direction that the best results are to be secured.

If proper calculations are made, and the question of initial cost, sizes of ducts, flues, &c., not considered of more importance than efficiency, it is quite possible, by admitting larger volumes of air, to secure that in no case shall the temperature exceed 70° to 75° Fahr. at the inlet registers, or 90° to 100° Fahr. next the battery.

The severe competition of the present day makes it a great temptation to an engineer to cut down the air supply to a minimum in order to reduce the size of the fan, motor and battery to the lowest possible limits, and, as a consequence, he is faced with the necessity of using steam at a pressure of from 15 lb. to 60 lb. per square inch in order to secure the high temperature required.

Here is one of the main reasons why the quality of the air is often found to be most unsatisfactory. Within reasonable limits, batteries should be kept at the lowest possible temperature. If, therefore, steam must be used as the heating medium, it should always be at or below atmospheric pressure. Certain precautions have necessarily to be taken against frost where hot water is used, but the risk is inconsiderable where a circulating pump is provided, especially if the connecting pipes are figured out large enough to secure a good circulation under a gravity head in the event of the pump failing.

The use of hot water certainly demands the provision of a considerable amount of heating surface, and is therefore more costly, but the extra expenditure is more than justified by the results obtained, for air warmed by a low temperature hot water battery possesses a degree of freshness that is conspicuously absent when steam at pressure is used.

It is certainly somewhat unfortunate, from the heating engineer's point of view, that the warming of buildings by convected heat is to a great extent responsible for temperature monotony. In this connection the open fire, with its large proportion of radiant heat varying in intensity from hour to hour, possesses by comparison an undoubted advantage.

Another factor which has an important bearing on the quality of the air is to be found in the hygienic condition or otherwise of the ducts. Far too often the design and construction of these is left entirely to the discretion of the architect or builder, the engineer contenting himself with merely indicating the positions and figuring the sizes. It is obvious that if, as is frequently the case, ducts are built below the basement floor without precautions being taken to keep out damp or other emanations from the soil and with no regard to cleanliness, the quality of the air supplied must of necessity suffer. In more than one case ducts have been built in waterlogged soil in ordinary stock brickwork, with the result that surface water percolated through to such an extent as to render them little better than sewers. Too much care cannot be given to the construction of the ducts, as upon this depends very largely the success of the installation. The main distributing ducts should always be made large enough to admit of easy access to all parts of the system for sweeping and cleaning. They should be faced internally with glazed bricks and the floor paved with tiles, the ceiling should be cement, rendered to a smooth face, and in every case where they are situated underground an asphalte or other damp-proof backing should be provided. It is also desirable that all angles should be well rounded off. It is always a good thing, where electricity is available, to provide a few points for electric lighting.

The proper distribution and circulation of air in a room constitutes the real problem that the ventilating engineer has to solve, if solved it can be. It is certain that, if we are called on to ventilate a room in such a way that every individual is conscious of even a slight horizontal circulation of the air, many of our preconceived notions in this direction must fall to the ground. Such a proposition, although, no doubt, under certain conditions, quite feasible, is, to all intents and purposes, outside the range of practicability, as, apart from the prohibitive cost of the installation and subsequent upkeep, the introduction of such enormous volumes of air, in such a way as to secure uniformity of movement, would present great difficulties. However excellent the idea may be in the abstract, it is somewhat Utopian in character.

Until we have educated the general public up to our own and the medical profession's ideal of good ventilation, we are bound, from a commercial standpoint, to consider their feelings to some extent. The views expressed with respect to warmth and fresh air are generally based upon individual constitutions, without regard to physiological considerations; in other words, we extol the "exhilarating breezes" or condemn them as "chilling draughts" in direct ratio to the effect they have upon our personal comfort. By effecting a compromise between theoretically ideal conditions and those which may be regarded as affording fair ventilation, we may succeed in securing results that will show, at any rate, some advance in the right direction.

The question of proper distribution of air demands that a great deal of consideration be given to the positions of the warm air inlets and exhaust outlets.

So far as the warm air inlets are concerned, these should be situated about seven to nine feet above the floor. In this position the velocity of the incoming air is, to a great extent, broken up above the head level, and, due to the drop in initial temperature as it circulates through the room, gently falls to the level of the breathing zone. The inlets should be as numerous as can conveniently be arranged, and so set out as to ensure that the air in no part of the room shall be in a state of stagnation. Delivering air in large volumes at one or two points is obviously to be avoided. The lower the velocity of the air through the registers the better. Two feet per second, if possible, should be regarded as the maximum. The registers should be provided on the inside with copper wire gauze or some textile fabric, to ensure an approximately even delivery over the whole of the face of the register. The effect of the gauze, which should necessarily present a considerable area, is to offer some resistance to the passage of air and break down the velocity in the flue. At the same time it forms a rough and ready means of further filtering.

With regard to the location of the exhaust outlets, the question as to whether they should be at floor or ceiling has in past years excited considerable controversy. Under varying conditions each may possess certain advantages, and for that reason the engineer who provides outlets at both floor and ceiling is exercising a wise discretion, even if he be accused of not having the courage of his convictions one way or the other.

It is undoubtedly an advantage, from the point of view of economy, to exhaust at or near the floor when a building is unoccupied; but whatever may be urged to the contrary, in a more or less crowded room upward exhaust is desirable, for an efficient overhead exhaust system affords a sense of freshness and relief that cannot be detected in a system of downward ventilation. As is the case with the inlets, the exhaust outlets should be as numerous as possible, and so placed that they draw more or less equally from all parts of the room.

Although adding somewhat to the cost of the installation, it is always desirable to connect the exhaust system to an extraction fan, otherwise it is necessary to depend upon a slight pressure being established in the room by the Plenum fan, to secure a flow of air through the exhaust outlets. The necessity for maintaining this pressure requires that the windows or other external openings should always be kept closed. Such a system of exhaust, however, is not at all times reliable, as it is likely to be entirely upset by external air pressure during high winds. The provision of an exhaust fan not only secures a uniform rate of exhaust, but also admits of windows, doors, &c., being opened at will without seriously interfering either with the fresh air supply or the extraction of so-called vitiated air.

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VARIETIES.

WHILE recognising the patriotic motives which have influenced Mr. Newton (the borough surveyor) in provisionally accepting nomination for a commission in the Royal Engineers (T.), the Paddington Council's Works Committee state that they are unable to release him at the present time.

THE Notts County Council have so reorganised the county surveyor's and architect's department that the work of the two officials will now be separated. The duties of the two officials have been clearly defined, and Mr. J. C. Haller, who has been acting as county surveyor since Mr. E. P. Hooley was called up for military duties, has been appointed county surveyor at a salary of £500 a year. The committee originally intended offering £750 a year, but they subsequently thought this an excessive amount, and advertised the office at £500, receiving ninety-seven applications in reply.

THE Society of Antiquaries of London, at the anniversary meeting on St. George's Day, held the customary elections of officers and council for the ensuing year, and the result was as follows: President, Sir Arthur Evans; treasurer, Mr. William Minet; director, Sir Edward Brabrook; secretary, Mr. C. R. Peers. Members of Council: Col. F. W. T. Attree, R.E., Mr. W. Paley Baildon, Mr. J. N. Bankes, Mr. E. N. Baynes, Mr. W. H. Bell, Mr. H. Brakspear, Bishop Browne, Mr. J. D. Crace, Rev. E. S. Dewick, Mr. D. G. Hogarth, Mr. L. W. King, Mr. William Martin, Mr. Philip Norman, Mr. F. W. Pixley, Mr. D'Arcy Power, Sir Hercules Read, and Mr. C. A. Tennant.

IN October 1910 Mr. Evan Spicer, in his capacity as a member of the London County Council, gave notice of motion as to a proposed allocation of £10,000 a year by the Council towards the acquisition of objects of pure and applied art. This motion has been appearing on the agenda paper ever since. Recently Mr. W. Reynolds Stephens, also a member, has suggested that steps should be taken on the lines of the motion with a view to assisting the artistic professions during the depression consequent upon the war. The Improvements Committee consider that the present time was inopportune for giving effect to the proposal, and have accordingly decided to take no action in the matter.

THE course of Carpenters' Company lectures on "The Architecture of Belgian Towns" will be resumed at University College on Thursday, May 6, at 5.30 P.M., when Mr. Arthur Stratton will lecture on "Bruges and Ypres"; the chair will be taken by his Excellency the Belgian Minister. On Thursdays, May 13 and 20, at 5.30 P.M., Mr Patrick Abercrombie, of the University of Liverpool, will lecture on "Brussels." The Chairman at his first lecture will be Sir Herbert H. Bartlett, Bart., and at his second lecture the President of the Royal Institute of British Architects, Mr. Ernest Newton. The lectures are open to the public without fee. Applications for tickets, which should be accompanied by a stamped, addressed envelope, may be made to the Secretary, University College, London (Gower Street, W.C.).

THE Building Acts Committee of the London County Council report that they have considered a letter from the Home Office stating that the Tribunal of Appeal has requested the Secretary of State, in the exercise of the powers conferred upon him by Section 179 of the London Building Act, 1894, to fix for a further period the scale of remuneration of the members of the Tribunal appointed under that Act and the London County Council (General Powers) Act, 1909, and asking for the observations of the Council upon the subject. The scale laid down by the Secretary of State in 1895, and continued in operation from year to year until 1914, was for each member, three guineas for the first hour and two guineas for each subsequent hour of each day's sitting of the Tribunal, and the committee have suggested that this scale should be continued in operation for the year 1915.

THE London and Lancashire Fire Insurance Company, Ltd., held their annual meeting on the 28th inst. From the report it appears that in the fire account the premiums are £1,655,713, and the profit, after providing the usual 40 per cent. for unexpired liability, is £146,033. The accident premiums are £908,075 an increase of £224,677 over 1913. The surplus is £170,023, and, after providing 40 per cent. for the increased liability, the profit is £80,150. Interest on investments has further yielded £113,794. After writing off the sum of £110,000 from the company's investments, transferring £10,000 to the Staff Pension Fund, and providing for the dividend for the year of 29*s.* per share, less income tax, as against 27*s.* per share last year, there is a net addition to the funds of the company of £180,300. The total premiums amount to £2,799,044, and the reserve funds, beyond capital, to £3,466,344.

THE attention of the heritors of St. Cuthbert's Parish Church, Edinburgh, having been drawn to the extent to which decay has attacked the stone-work of the newer part of the church, they asked Mr. John Anderson, architect to George Heriot's Trust, who has for some years made a special study of preservative works, to report on the steps necessary to be taken. After consideration it has been decided to proceed with the works in accordance with Mr. Anderson's recommendations. The works, in the main, will consist of the removal of all dirt and decayed matter, and, after pointing the defective joints of stonework, finally treating the fresh surfaces with a special fluid as a preservative. This preservative, which is colourless, has been found most efficacious in resisting the deleterious effects of the atmosphere. In addition, the upper surfaces of all level cornices and other projecting features will be covered with lead.

A JOINT meeting of the Executive Committee and the Advisory Council of the Scottish National Housing Company, Ltd., was held last week. It is understood that, in terms of an agreement between the Local Government Board and the company, the Board will advance nine-tenths of the capital required for the housing scheme at Rosyth "Garden City" on terms extremely favourable to the company. The total amount intended to be expended in the course of the next five or six years is about one million pounds, and the amount of working capital to be provided by the company will be one-tenth, or £100,000. The company being of the nature of a public utility society, the shareholders' dividends will be limited to 5 per cent. per annum. The company's prospectus is intended to be issued immediately.

THE threatened stoppage in the Cardiff building trade seems to be avoided, a compromise having been effected at a meeting of the South-Western Centre of the Building Trade Conciliation Board at Bristol last week. The operatives, who asked for an advance of 1½*d.* an hour in the wage rates, were offered an increase of one-halfpenny by the local Builders' Association, and, failing an agreement at the local Conciliation Board, the matter was referred to the South-Western Board. The latter, after a lengthy consideration, decided to grant an increase of a halfpenny per hour from May 1, and a further advance of a halfpenny on October 24 next, the increase to remain in force until May 1, 1917. The Aberdare masons, who asked for an increase from 9*d.* to 10½*d.* per hour, were granted a halfpenny per hour advance from July 3 next, to remain in force till May 1, 1917.

TRADE NOTES.

MESSRS. ED. BENNIS & CO., LTD., are in the happy position of being able to report that the ordinary commercial demand for Bennis machine-stokers, coal elevating and conveying plant has been thoroughly well maintained during the past six months. A feature is the very wide range of industries and of ground covered. Corporation electricity stations come an easy first, and they include those at Manchester (Bloom Street and Stuart Street), Burton-on-Trent, Coventry, and Blackpool. All these are, like many other recent contracts carried out by the firm, repeat orders—a fact extremely gratifying to the manufacturers, and an eloquent testimony to their sterling merits. The Blackpool plant is interesting, for it consists of a bucket elevator to raise ten tons of coal per hour and deliver it in an overhead bunker (of reinforced brickwork and concrete) with a capacity of 170 tons; as the coal passes from the bunker it will be weighed by an automatic machine and delivered direct into the mechanical stoker hoppers. Contracts have been carried out recently for, among others, Nobles Explosives, Ltd., South Wales (thirty-two coking stokers and furnaces for 9-foot diameter Lancashire boilers); Messrs. Chance & Hunt, Oldbury; the South Normanton Colliery Company; John Fenton & Sons, Ltd., Batley; Wright's Finishing Company, Ltd., Northampton; the Sun Flour Company, Ltd., Bromley-by-Bow; and Adrol, Ltd., Northampton, &c.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, May 10.

Surveyors' Institution : A Paper giving a Summary of the Session's Papers on "The Acquisition of Land, Tenure, Rating and Housing," by Mr. William Allen (Barrister-at-Law), at 8 P.M.

Tuesday, May 11.

Society of Engineers : Paper, entitled "Some Future Developments in Heating and Ventilation," by Mr. Arthur H. Barker, B.A., B.Sc., at the Institution of Electrical Engineers, at 7.30 P.M.

Thursday, May 13.

London University : Paper, entitled "Brussels," by Mr. P. Abercrombie, M.A., at 5.30 P.M.

Society of Architects : Consideration of the proposed model general conditions of contract to be recommended by the Society for use in connection with building works, at 7.30 P.M.

Friday, May 14.

Royal Institution : Paper, entitled "The Archives of Westminster Abbey," by Canon E. H. Pearce, at 9 P.M.

ARCHITECTURE AT THE ROYAL ACADEMY.

THE outstanding feature of the Architectural Room at the Royal Academy this year is the unusual number of large drawings that have found a place on the walls. For some of these the recent competitions for the Board of Trade Offices at Whitehall and for the Parliament Buildings at Ottawa, Canada, are responsible. Mr. E. Vincent Harris exhibits his selected design for the former in a perspective view from the river, which, as it has been reproduced in *The Architect*, we need not further describe. Mr. Harris also shows his design for the Parliament Buildings at Ottawa, a conception of great dignity and restraint, with square, flat-topped masses on terraces overlooking the water, contrasted with a lofty obelisk and columns crowned with winged figures. Other designs for the Board of Trade Offices are shown by the half-inch detail of Messrs. Robert Atkinson & L. Alexander, and their general perspective; by the perspectives of Messrs. Charles Gascoyne & George Nott and of Messrs. P. Thomas, E. Prestwich, and I. Jones. Another design for the Ottawa building is that of Messrs. Clyde Young & H. S. East, which follows somewhat closely the suggestive design prepared before the competition and illustrated in last year's Royal Academy.

Messrs. Adshead & Ramsey's interior view of St. Anselm's Church, Kennington, is another large drawing. It shows a Byzantinesque treatment, with a blue domed ceiling and coloured decoration, but there is insufficient justification in the representation of detail for so large a drawing, which suggests the idea that would-be exhibitors expected that space would be found this year for large frames, in consequence of many younger members of the profession being unable to send in work. An extreme instance of the big drawing is a full-sized coloured cartoon for stained glass, illustrating the story of St. Kenelm, by W. H. & Florence Camm, which certainly, in our opinion, does not justify the space given up to it.

Three drawings in one frame, two exterior and one interior view of the Church of St. John the Evangelist, Carrington, Notts, by Mr. W. Curtis Green, seize a large amount of wall space to illustrate a not very large building, but a design possessing much of bold simplicity and originality, with a big tower at the west end, big that is on plan, not in height, for thoughout there is evident a struggle on the part of the architect with the limitation of small means, a struggle that may fairly be said to be successful.

Mr. Thomas H. Mawson has secured a large area of wall for his plan showing "Proposed Layout of Coal Harbour, Stanley Park, Vancouver," an axial if not exactly symmetrical arrangement with a large round pond in the centre, a stadium on the left, a restaurant on the right, a museum at the top, and a boulevard, yclept Georgia Street, tailing away at the bottom and skirting a typical American gridiron plan of town. Midway between the three main buildings, in the intercardinal points, are two playgrounds for children. As a layout the design is commendable, but one has to imagine the environment and assume that it is suitable.

The design for "The Lord Wandsworth Institution, Hants," by Mr. E. Guy Dawber, of which a prospect from the south is shown in a long frame, cannot be found fault with for taking up an undue amount, for the group of buildings shown necessitates at least as much space as is taken. The group consists of a central hall block in the middle, a laboratory block on the right, and balancing this on the left an engineering block. These form a symmetrical composition, framed by houses on each side, in an avenue, so to speak. Behind the houses on the left is the administration block, which shows in the "prospect from the south," but is out of the symmetrical composition—a clever solution of a difficulty. As all the blocks in the prospect are only one storey high, another difficulty has arisen in giving sufficient centrality to the group. This Mr. Dawber has effected by a high roof and big clock-turret on the central hall block, but at the cost of overweighting the individual one-storey building. The façades are treated in a modern fashion of eighteenth-century type, and the various blocks are linked up by connecting colonnades. It is a pity the central building could not have had a few more feet in height of wall.

The Second Church of Christ Scientist, in Palace Gardens Terrace, Kensington, by Sir John J. Burnet, R.S.A., is shown in a large frame, which contains a perspective of the exterior by Mr. Walcot, in his usual brilliant style, a plan, sections, and elevation. The absence of tradition in the community for whom the buildings are to be erected has enabled the architect to plan a scientist church, with many unusual though desirable adjuncts, a cross between a church and a concert hall. The main building is square on plan, with a wide corridor on three sides, in which are cloak-room accommodation and lavatories. A garden occupies part of the site, enclosed towards the street by an open cloister and on the other side by a lecture hall for 300, with classrooms beyond. A modern type of Renaissance is adopted for the external treatment, varied by an Italian-like campanile, whose upper storey is adorned by a series of interlaced semi-circular arches. The concert-room-church has galleries and a sloping floor amongst its heterodox features. The whole scheme is very interesting in its modernity.

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Another large perspective by Mr. Walcot shows "The South African Medical Research Institute, Johannesburg," by Mr. Herbert Baker. Two L-shaped wings are connected by a central block, which consists of an open colonnade below, surmounted by an upper storey and central tower. Through the colonnade there is seen a suggestion of a courtyard beyond. A severe type of Renaissance detail has been adopted with Doric columns, and a very fine design results from the union of this and the pleasing composition.

Of the architect members of the Royal Academy, Mr. Reginald Blomfield, R.A., is represented by two models, one of "Farm Buildings for the Wandsworth Trust, Long Sutton," from a plan supplied by C. S. Orwin, the other of "Entrance Gateway to the Wandsworth Trust Estate." The farm buildings are, as far as the plan admits, symmetrical, plainly but picturesquely treated, and when toned by time and weather will be pleasant to view. The entrance gateway is more ornate, as is proper, and thoroughly representative of English Renaissance feeling; a large central semi-circular arch is surmounted by a segmental pediment and coat mail, with elaborate wrought-iron gates. Smaller side gates are flanked by well-designed piers. The whole is an excellent composition.

Sir Thomas G. Jackson, Bart., R.A., has two drawings, neither of which will add to his reputation. The "Proposed Completion of the Museum of Archæology and Ethnology for the University of Cambridge" is a curious mixture of Renaissance, Gothic, and Romanesque detail. The "New Church of St. Faith at Edmonton, Canada," is equally a mixture of Romanesque and Early English Gothic motifs.

Sir Ernest George, A.R.A., gives us some more of his work in India: "A Court in the Shirpur Palace, Indore," and "Houses for the Staff of H.H. the Maharajah Holkar of Indore." In these we see a fusion of Renaissance and Indian motifs, without costly elaboration but with considerable simplicity and picturesqueness of treatment.

Mr. Ernest Newton, A.R.A., following his former precedent, restricts his work to coloured geometrical drawings. "Martin's Bank, Lombard Street," shows an expressive treatment of modern steel-frame construction. Five semi-circular arched openings on the ground floor carry a similar number of bays in three storeys above, separated by brick piers and pilasters, and above their cornice is an attic. The whole design is simple and sensible. A proposed chapel at Bournemouth, for a sisterhood, has a large choir with aisles, separated from a single span nave by a rood screen and loft, the stairs to which, both north and south being constructionally external to the main walls, give piquant features and lead up to a central lead-covered flêche. Decorated tracery in tall proportioned windows lends scale and ascensivity of line.

Sir Aston Webb, R.A., Mr. E. L. Lutyens, A.R.A., and Professor E. S. Prior, A.R.A., do not exhibit this year.

"THE ARCHITECT" STUDENTS' SKET CHING AND MEASURING CLUB.

WE are pleased to be able to report that the contributions received for the past month all show commendable attempts at water colour painting and are not mere line drawings tinted in water colour. There is a gratifying endeavour to employ water colour technique, although the standard of performance shows a need for more practice. We may, in fact, say that all our contributors have started on the right road, and with steady and constant application may expect to attain a desirable amount of skill.

Mr. Bright Fraser has selected the well-known "Hall ith' Wood," near Bolton, Lancs., for his subject. As a picture, his drawing fails by the too large a space occupied by the building, instead of its being contained in the middle distance with adequate space for foreground and background. This is a fault to which architectural students are peculiarly prone. Mr. Fraser's brushwork is good and there is a satisfactory harmony of tone in his colouring. He has learnt the lesson that "magpie" architecture is not black and white.

"Stickit" has avoided the fault noted in Mr. Fraser's work and shows a well arranged view of the stone-built village of Askrigg, in Wensleydale. His colour scheme suffers from too great insistence of red tiled roofs, and his trees require more practice and greater fluidity. His work is commendable for its special reference to grouping and environment.

"Ebor" finds his subject in Minster Gates, York, a view of the west entrance to the Minster down a narrow street. The general harmony of colour is pleasing, but the drawing lacks atmosphere from the want of a background, which might have been attained by a greater differentiation of tone between the west front of the Minster and the tower.

"Improver" has selected a well-grouped view of All Saints' Church, Newcastle-on-Tyne, which is rightly placed in the middle distance, but jumps out too much by lack of force in the colouring of the foreground and the use of too light colouring in the sky. The foliage handling is weak.

"Samedi" shows good brush work and a consonant colour scheme in his view of Gilbertfield Castle, Cambuslang, a typical Scots baronial house. More foreground with some stronger incidental points in the right of it would improve the drawing and put the main subject more definitely into its proper place, the middle distance.

We award prizes of half a guinea each to Mr. Bright Fraser, "Stickit," "Ebor," and "Samedi."

As previously announced, we regret that the work of "The Architect" Sketching and Measuring Club will be discontinued after June until the return of peace.

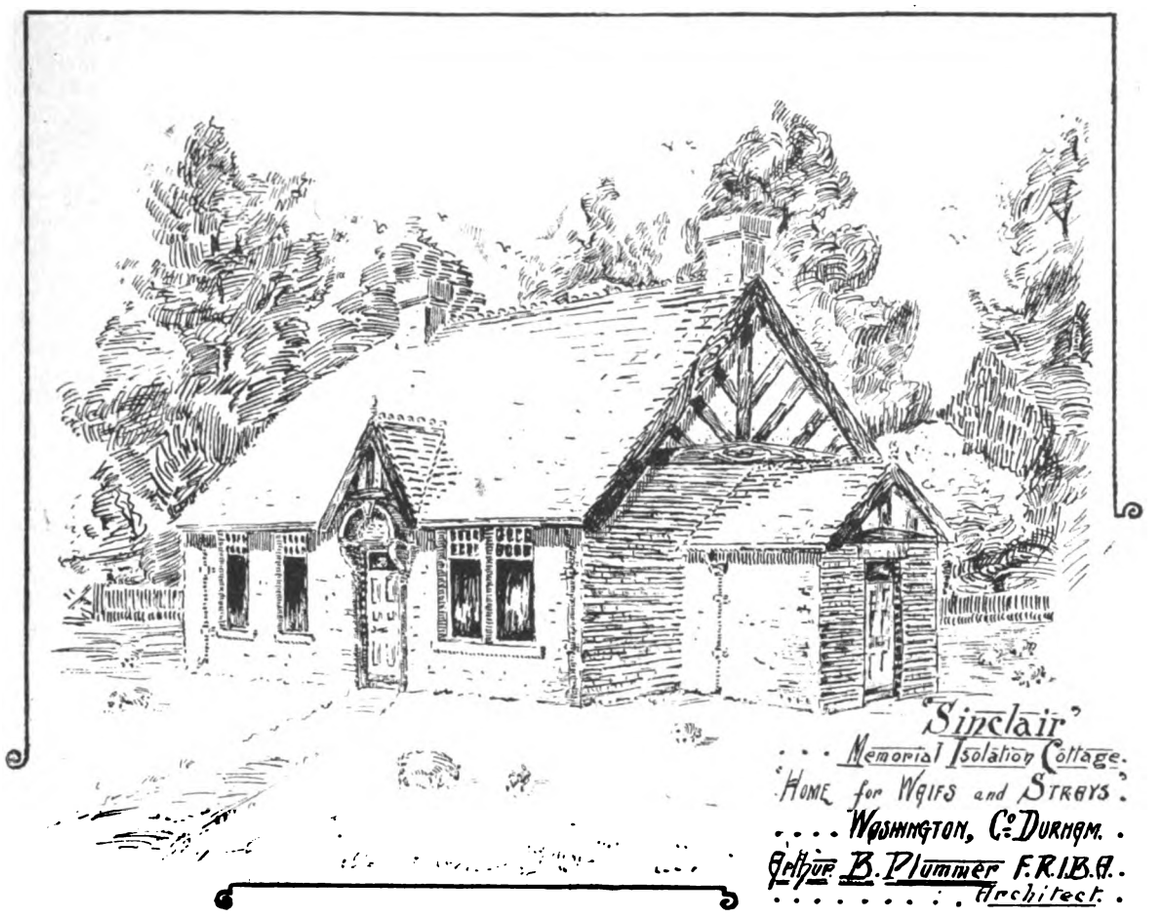
NOTES AND COMMENTS.

WE regret to have to record the death in action, on April 26, of Private Albert Edward Lowes, A.R.I.B.A., who was with the Army Service Corps attached to the 6th Northumberland Fusiliers. Mr. Lowes was the holder of "The Architect" Travelling Studentship in 1911, and the drawings he made during his tour were published in *The Architect*. When he joined the forces during the present war he was an assistant with Messrs. Bradshaw, Gass & Hope.

At a meeting of the Society of Antiquaries a report on the excavations at Old Sarum in 1914 by Sir William Hope and Lieut.-Col. Hawley was read by the last-named. The season's operations were restricted to the area between the cloister of the cathedral church and the city wall to the north of it. This area was found to have been occupied by a large house of the twelfth century. It was probably built by Bishop Roger shortly before his death, and pulled down when the move to New Sarum took place.

The Master of St. John's College, Cambridge, read a paper on the original contract for the tomb of the Lady Margaret Beaufort at Westminster Abbey. It was until recently a tradition rather than an established fact, he said, that the tomb was the work of Pietro Torregiano, but the contract and other documents in possession of St. John's placed the question beyond doubt. He was inclined to think that the tomb, which was to cost £400 was designed by more than one mind—Prior Bolton, of St. Bartholomew's, may have had something to do with it—and was handed over to Torregiano to carry out. The documents which the Master exhibited included the contract with Torregiano, the College book of accounts, showing the payment of £4 10s. to Cornelius Symondson for "makyng a grate of Irone at Westmr. over my lady the King's mother and vijth"; and the contract for the "grate" between Nicholas Metcalf, the Master of St. John's, William Longford, the vice-master, and Cor

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nelius Symondson, smith, of the parish of St. Clement Danes.

The following interesting account of the Benson Memorial pulpit, which is being erected in Lincoln Cathedral, appears in the *Lincoln Diocesan Magazine*.

"The pulpit presented to Lincoln Cathedral by Mr. A. C. Benson, in memory of his father, Archbishop Benson, who was Chancellor of Lincoln from 1873 to 1877, and which is being erected on the south side of the nave, has a curious history. It was formerly in the church of St. Mary, Rotterdam, which was built in the reign of Queen Anne for the use of the English colony in that city. Queen Anne gave £500, and the great Duke of Marlborough also subscribed, and a fine city church was the result. Fitted with excellent woodwork, it was completed in 1708. Its design is traditionally ascribed to Sir Christopher Wren. There was no need to destroy the church and its removal was a piece of melancholy vandalism. In the course of the demolition arrangements were made to spare the royal coat of arms carved in stone in the pediment, and the coat of arms of the great Duke of Marlborough at the west front; but when the royal arms had been removed, and were lying on the ground, the crane holding the Duke's arms gave way, and the heavy stone fell on the top of the royal arms, so that both were destroyed. The fine organ case has been presented to the Memorial Hall at Eton by Mr. H. E. Luxmoore. The rest of the woodwork was purchased by Mr. A. C. Benson, who gave the altar rails to St. Giles' Church, Cambridge, and the reredos, with its pediment and fine carved columns, to Selwyn College, Cambridge. The pulpit is now to find a home at Lincoln Cathedral, where Dr. Benson's voice, when Chancellor, was so often heard. It is a fine piece of contemporary work, and the great sounding board, as well as the beautiful staircase (that is now to be completed), are excellent pieces of craftsmanship."

In the course of his monthly letter in the Diocesan magazine the Bishop of Manchester says that the visitation by the Rural Deans has evidenced the care taken of the churches in this diocese to be on the whole satisfactory. Very few defects are noted, and most of those trivial. Damp is the great enemy with which they have to contend in Lancashire, and in some few instances the lack of a damp course, the presence of soil on the outside wall above the church floor, or exposed position has led to unsatisfactory conditions. These cases, however, are rare. The two defects most common are the lack of sufficiently large or sufficiently secure safes in the vestries. In such cases either the communion plate or the registers or both are housed at the vicarage or elsewhere. Such housing is not satisfactory. Registers especially are liable to find their way under accumulations of newspapers or books, and to disappear from view altogether. The churchwardens should provide safes large enough and strong enough to contain all the registers and the plate, and these safes should be in the vestry. The other common defect is neglect of insurance of the communion plate against burglary as well as fire. The care of rare and specially valuable communion plate is, the Bishop says, more difficult. "Some day we hope that such plate will be collected at our cathedrals or some other suitable centre, and be open to view from time to time. Meanwhile, if it is desposited at a bank, there should be in the safe in the vestry an acknowledgment from the bank that they hold the plate, and it should be periodically inspected, for instance, by the rector and wardens each Easter. Otherwise deposits at banks are easily forgotten."

The discussion which took place at the Exeter County Council when the preservation of the ancient house in King Street, Exeter, was being considered illustrates the habit of mind of some people towards antiquity, but we are glad to know that the opposition was unsuccessful.

The Estates Committee, acting on advice of the Ancient Monuments Board, recommended the rescinding of the resolution ordering the demolition of the old house in King Street, which was said to be an example of a very rare class of antiquity and should certainly be preserved.—Alderman Linscott opposed the rescinding of the resolution, saying an expenditure of £450 (the esti-

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mated cost of restoration) was not warranted.—The Mayor explained that it was not proposed that the City Council should spend £450 upon the building. It was merely proposed that the house should not be demolished so that interested societies might consider the best thing to be done.—Mr. Challice said the committee had had a lot of advice, but none had come forward ready to take the responsibility of the restoration. There were many better ways of spending money than upon a rat-ridden house. They might spend it upon the sick and wounded soldiers for example.

The town clerk said it was true only small portions of 12th century work remained, but the interest and antiquarial value of the house was not confined to that. There was a great deal of most valuable and interesting 14th, 15th, and 16th century work about it. It was extremely rare. The Council decided that the work of demolition should be stopped, and that the town clerk should make inquiries as to any sources from which contributions might be obtained toward the cost of restoration.

Another chapter in the history of Malling Abbey was reached when, in the Court of Appeal, before the Master of the Rolls and Lords Justices Pickford and Warrington, an action was heard to determine the future ownership of Gundulf's famous structure, erected about the year 1100. The case was an appeal from a decision by Mr. Justice Eve, who directed Miss Beaumont and Miss Ewart, the two lady trustees of Malling Abbey, to sign the conveyance executed by the three clerical trustees transferring the Abbey to the English Abbeys Restoration Fund. This was appealed against by Miss Tyra Louise Schiff, a senior member of the Society of Saints Mary and Scholastica, who formerly occupied Malling Abbey, and who had been appointed to represent the Community.

The Master of the Rolls, in giving judgment, said the two ladies did not feel disposed to execute the deed for conveying Malling Abbey to the English Abbeys Restoration Fund, but would have preferred that the property should have gone over to the Roman Catholics, Miss Boyd, the settlor, being a Roman Catholic. One had great sympathy for their way of looking at the matter, and in taking out an originating summons they acted with great propriety, leaving it to the Court to decide what should be done with the property. Personally he felt no doubt on this point. It had been argued that it made no difference that the members of the Society had been received into the Roman Catholic Church, but they had seceded from one Church and gone to another which regarded the English Church as schismatic. The members of the Society had acknowledged the supremacy of the Pope, and the property was in a derelict condition. Without going into theological questions or the niceties of doctrines, he felt that in the circumstances, and having regard to the fact that the right to exercise the plaintiffs' discretion had been vested in the Court, the decision of Mr. Justice Eve was right, and the plaintiffs must execute the conveyance to the Abbeys Restoration Fund.

Lord Justice Pickford gave judgment to the same effect, and Lord Justice Warrington concurred.

In a letter to the *Morning Post* Sir Richard Bagot draws attention to a pious but, we fear, ineffective resolution which was unanimously voted at a special general meeting of the Society held in Florence on January 11 last. At this meeting all the Italian Academies, Universities, State Libraries, and Institutes of Art and Science were represented, and unanimously gave their adherence to the said resolution and to the proposals and aims of the Council of the Società Leonardo da Vinci as to carrying it into effect.

A translation of the resolution in question reads:—

"Affirming that it is the duty of our generation to preserve that patrimony of Art and Culture bequeathed and entrusted to it, and that it is responsible to future generations for this sacred charge (in view of the dispositions of Article 27 of the Hague Regulations, revised in 1907 and accepted by forty-four States),

"It is desired that all artistic and historic monuments, galleries and museums, libraries and archives—in short, all seats of learning and collections of art and culture—may be respected by belligerent armies with all possible efficacy both during and after war, as being glorious legacies of the Past held for the benefit of the Future, and the property not of this or that nation, but belonging in common to the whole civilised world."

The new proposals of the Treasury limiting the conditions upon which grants will be made by the Road Board are causing serious concern to the local authorities interested. At their meeting last week, the County Councils Association protested against the new regulations, which, by the way, have so far been described in the vaguest terms. The Road Board, it appears, before making a grant in respect of "certain roads," must be satisfied as to the adequate maintenance of "other roads," in respect of which no grant has hitherto been made.

In some quarters, this condition is held to apply to secondary roads, and this assumption, if accurate, will revive an old controversy in the West Riding, where the County Council maintains some 1,100 miles of roads, at an annual cost latterly of over £200 a mile. Nearly a quarter of a million sterling is spent by the County Council upon its roads, and now, it seems, the Treasury, before making any grant through the Road Board, will need to be satisfied that all roads in the County Council's area, including those towards which no contribution whatever is made, are being properly maintained. The position is complicated by the fact that the main roads in the West Riding are not directly controlled by the county authority as they are in many other counties. The County Council provides the cost of maintenance, but leaves the local authorities to do the work. There has been much contention on this point, and only a year or two ago the Highways Committee decided upon a policy of direct control, only, however, to have their project vetoed by the full Council.

In connection with the movement set afoot some time ago by the Edinburgh School Board for systematic visits to the Scottish National Gallery by a selected number of pupils from each school, Mr. Campbell Mitchell, A.R.S.A., addressed a meeting of teachers and others interested at the College of Art. Lord Guthrie presided, and said that to get the teachers to instruct, and, still more, interest their pupils in the great world of art was a great movement. He was instructed in a great many things at school—he was interested in very few—and he thought one great feature of modern education as distinguished from that of his time was precisely this, that whether it be geography, or history, or any other subject, the aim and the result of the teaching was to give the children a lifelong possession. In this scheme of art culture they had a School Board up-to-date and sympathetic with the movement, and he had no doubt about the attitude of the teachers. The present was a splendid opportunity for trying this experiment. It did not involve an additional task on an already overburdened profession, for the hours to be spent in the National Gallery would count as part of the school hours. The result would be that no one would feel any burden, and he was sure the teachers as well as the children would find it a great delight and recreation.

Mr. Campbell Mitchell in his lecture dealt with the early circumstances which made for the formation of artistic taste among the people of Scotland. Life in an old Scottish town was touched upon, the lecturer showing how the important position held by the craftsmen must have had a powerful effect in shaping the particular trend and choice of calling of the young members of the community, and the churches stored and adorned with the resources of arts and crafts, the residence of Royalty, the pomp and show practised by the nobility, the love of

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the inhabitants for gay apparel, and the frequency of holidays or saints' days, and consequent gaiety and "sport and mirth," brought into the surroundings of the children of an old Scottish town an element of art and of pictorial and spectacular effect to which the young people of the present day are utter strangers. The changed conditions of modern life had removed all art influences from the lives of many of the young of our cities, and it was to counteract this that the School Board's scheme was formulated, and the fact that it included visits to the Museum showed the wise intention of the Board, that they who in due time would become citizens, and so form the market for the productions of artists and craftsmen of the future, should have their taste refined and their appreciation of the beautiful developed by the intelligent study of the best examples of the past and present.

One of the most wonderful achievements of modern research during the last half-century has been the exploration for, and recovery of, many thousands of ancient manuscripts—mostly papyri—from the sands of Egypt. Although they are always fragmentary, and frequently partly illegible for their decipherment, portions of many of the works of lost classic authors have been restored, and the whole domestic life and polity of Graeco-Roman and Byzantine Egypt has been revealed to us. For many centuries there were numerous Jews in Egypt, and from time to time pieces of Aramaic-Hebrew writing have appeared, either upon papyri or pottery fragments, and in a few cases these pieces were of sufficient size to be readable.

During the last ten years (says a writer in the quarterly statement of the Palestine Exploration Fund) this hope of Semitic scholars has been amply fulfilled by the finding of a whole series of Aramaic records concerning Jewish residents in Egypt, and even in some cases referring to their compatriots in neighbouring Palestine. These discoveries, in one sense among the most important ever made in Egypt, because of the light they throw upon the Old Testament, both as literature and history, and upon the career of the Hebrew race, have been seldom noticed in the British Press, and yet the story of their finding and publication, it is hoped, will prove of much interest to us.

Passing over the minor sporadically found fragments which have been brought to light from time to time in the last half-century, the new and more prolific discoveries may well be divided into two series—a batch of some forty manuscripts acquired by various visitors and explorers in Egypt in the years 1901-1904, and another collection secured by the Germans in 1907. These two sets of documents were all found upon, or near to, the island of Elephantine at Aswan, thus proving the existence, at some period, of a Jewish community there.

The result of an impartial study of the new historical and theological material provided by these Aramaic papyri will prove that they so freshly illuminate the later Old Testament references concerning Jewish colonies in Egypt that only now, for the first time, can we appreciate the true import of their allusions.

The great temptation of the Jews, subsequent to their occupation of Palestine, under which they only too frequently fell, was to become polytheists, and worship, in addition to, or even to the neglect of, Jehovah, the local Syrian deities, whose cults were frequently of a most immoral nature. This crime had to be eliminated before the Jews became a people who, by their absolute allegiance to the one true God, could be the cradle for Christianity, the veritable monotheism adaptable for all humanity. The continued efforts of the Torah and the prophets, the gradual destruction of the native pagans of Palestine, and the calamities and judgments which fell upon the Jews who practised or even connived at polytheism, at length purged away the taint from those living in Judæa. But for those Hebrews who went to reside in Egypt the temptation to fall back into the evil courses was well-nigh overwhelming; in many cases they inevitably succumbed. For this the Old Testament had naught but condemnation, both for the relapse into idolatry and for the error of living in Egypt at all, because of the moral danger arising thereby.

The Elephantine manuscripts not only confirm all the Biblical references to these matters, but enable us to assign to these allusions in a manner that was hitherto impossible their full import and significance, which had been much under-estimated.

In these newly-found papyri every document which sets forth the site to which its contents refer mentions either one or two fortresses, S-w-n or Y-b (Yeb). The first of these is, undoubtedly, the old Egyptian name of the Aswan, or Assouan of to-day, and under practically the same name as in the papyri it is several times mentioned in the Old Testament. There it is called Swene, or Swane, and in two instances the references to it show that it was a frontier post. Thus Ezekiel writes: "I will make the land of Egypt desolate from Migdol to Swene, even unto the border of Cush." The phrase "Migdol to Swene" was similar to saying from John O'Groat's to Land's End, for the Migdol intended here was the most northerly, or north-eastern, fort in the Delta, upon the Syrian frontier, near to Pelusium, Migdol being a Semitic word for a watch-tower adopted by the Egyptians; whilst Swene was the southern frontier fortress upon the Soudan boundary.

Ezekiel knew that his Hebrew readers would clearly comprehend the all-embracing geographical term included within the most northern and most southern sites in which their countrymen dwelt in Egypt. Like our Princes of Wales in the Plantagenet period, in the West, the Crown Princes of Egypt, when they came of age, had to command the garrison upon the Ethiopian frontier, and upon assuming that office the title "Royal Son of Cush" was conferred upon them. Consequently, Ezekiel, when adding to the word Swene the descriptive comment that it was upon the Cush frontier, shows his accurate acquaintance with Egyptian topography of his age. Yeb, a word meaning "elephant," was the Egyptian name for Elephantine; hence the town and its district were called Elephantine by the Greeks. The Aramaic papyri call both places a "birta," or castle, a word translated, rather imperfectly, "palace" in Esther and Ezra, books composed at about the same date as these newly-found manuscripts. One of the places, therefore, was a fortified residence, or cantonment, commanding the Nile shore road, and the other served to guard the passage by water from Cush into Egypt.

The new papyri concern Jewish colonists at Elephantine. This need cause no surprise; it is substantiated by other evidence, both Biblical and classical.

The first number of a new monthly, at the price of 3*d*.—*Drawing*—shows us a well got-up little paper which should be of value to young architectural students, to whom we may commend a line in an article by Sir James Yoxall, M.P.—"If every architect could really draw!" The insinuation, we must admit, is well founded, despite the high standard to be not infrequently seen in much of our contemporary work. *Drawing* is essentially a practical magazine, and architectural students will find, for example, in the first issue useful information in "Stipple and Splatter Work." Another article on "Painting with three colours" should be studied by aspirants to water-colour painting.

At the last meeting of the Newcastle Society of Antiquaries it was announced that the fire which occurred recently in the Old Castle did not affect the library of the Society, which is now situated in Black Gate, but considerable damage was done to the Society's stock of publications. The damage, which is covered by insurance, amounts to about £200. The Council discussed the question of country meetings during the summer, and decided that any held shall not be by rail, but short ones near Newcastle. Only one was arranged, to take place in May, arrangement of any further meetings being deferred.

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ILLUSTRATIONS.

ST. CUTHBERT'S CHURCH, COPNOR, PORTSMOUTH.

THE above church is being erected under the auspices of the "Portsmouth Six Churches Fund," although almost the entire amount of the contract sum has been contributed by a single individual, Mr. Heath Harrison. The church is to accommodate 814 persons—572 in pews in the nave, 100 in the Lady chapel, and the remaining 142 in chairs in the nave and aisles.

The key plan on the view shows the arrangement of the church. It is divided into three square compartments each 36 feet square, separated by wide coupled arches springing from the main piers. The compartments are covered internally with plaster domes constructed on expanded metal lathing and steel ribs like the ribs of an umbrella. Two compartments form the nave, and the third forms the chancel; while beyond is a semi-octagonal apse, with the Lady chapel on one side separated by an arcade and metal grille, and on the other side a chancel aisle with vestries opening out of it, and an organ loft over the chancel aisle. A continuous aisle 6 feet 6 inches wide runs round the two sides and end of the nave, and there are five entrances directly into the church.

The font stands in the centre of the first compartment of the nave, and is of white Pentelic marble.

The church is built of local stock bricks of varying colour, with bands and dressings of thin red bricks. The internal columns are of Portland stone, the internal strings of Ham Hill stone; the external stonework is all of Doulting. The roofing tiles are large "Roman" tiles, and the dome of the tower is to be covered with copper. The pews will be of oak, and the chancel screen and panelling to sanctuary will be of dull polished walnut.

The contract sum, exclusive of fittings, was £10,983.

The following are some of the principal dimensions: Length of nave, 113 feet; length of chancel and sanctuary, 60 feet; total length of church internally, 173 feet; width of chancel and nave, 36 feet; width of aisles, 6 feet 6 inches; total width of church internally, 54 feet; height to springing of main arches and domes, 26 feet; height to intrados of arches, 42 feet 6 inches; height to crown of domes, 51 feet 6 inches; height of tower, 88 feet.

The architect is Mr. E. Stanley Hall, M.A., A.R.I.B.A.; general contractor, Mr. Samuel Salter, of Southsea; heating engineers, Messrs. Dargue Griffiths & Co., of Liverpool; steel casements, Messrs. Wainwright & Waring, of Wandsworth; tiling by Messrs. A. W. Allard & Co., of Clapham Junction.

COMPETITION DESIGN FOR MUNICIPAL BUILDINGS, DEVONPORT.

THE half-inch detail which we publish shows a portion of the design for this building by Messrs. Edwin T. Hall & E. Stanley Hall. It is part of the south elevation of their scheme. Their general plan made the principal entrance in the south elevation through a vestibule, 31 ft. by 16 ft.; into an entrance hall, 56 ft. by 52 ft., with a central staircase, branching on each side up to the members' lobby, 37 ft. by 30 ft., on the principal floor.

On this floor, over the main entrance, was situated the council chamber, flanked by the Mayor's suite and the Town Clerk's offices.

The committee-rooms were in a quiet position to the north of the lobby, and beyond this, extending from the West to the East road, was the large guildhall and the smaller assembly hall, raised a few feet above the roads. To the north of this were the sessions and police court, and above them, entered from Trafalgar Road, were the fire and police stations.

RECONSTRUCTION OF BUILDINGS, GLASGOW CROSS. SECOND PREMIATED DESIGN.

THE wholesale destruction of ancient and historical structures in Belgium and France, and the recent damage to Whitby Abbey, bring the question of the preservation of our ancient monuments very much to the front. Unusual interest, therefore, attaches to this competition, one of the conditions of which was the retention *in situ* of the iron steeple at Glasgow Cross. This steeple is one of the very few relics of the city's architectural past, and was built as part of the Tolbooth in 1603. This gaol, about the year 1810, appears to have outlived its purpose, and thus we find the following record: "In 1812 the gaol, adjoining the east end of the Town Hall, having become too small, from the increasing population of the city, was sold by public roup to Mr. James Cleland for £8,000, or somewhat above £45 per square yard for the ground, under the express stipulation that he should take down the old building and erect a new one conformable to a design by Mr. James Hamilton, architect, ornamented with turrets and embrasures, so as to keep up a similarity to the old tower of the gaol, which is still preserved. This tower, which projects into High Street, is 126 feet high, and is only remarkable for its terminating in the shape of an imperial crown. It is finished with a clock and bell, and a set of musical chimes so arranged to play a separate tune at the end of every two hours, changing after 12 P.M.* Mr. John Weir, a skilful musician, performs favourite airs on the musical bells every lawful day between 2 and 3 o'clock, Saturday excepted." Whether the memory of Mr. Weir, as an exponent of the local "Kultur," is worthy of preservation, we cannot say; but the scene of his labours most certainly is. It is all the more gratifying, therefore, to find the preservation of the original tower strictly insisted upon, more than 100 years after the first rebuilding. Some slight idea of the building designed in 1812 may be gained from the photograph, and it can be seen that the projection of the tower into the street creates a problem, from the traffic point of view, of considerable magnitude. That this is so is obvious from the fact that the tramway lines are diverted to properly clear the tower, changing again in direction at the point marked A on plan. The authors of this, the second premiated, design decided to set back the frontage farther than the suggested building line, and to form a relief track between the existing tower and the new buildings, so as to obviate the necessity of Trongate—High Street traffic, and traffic along High Street in a northerly direction crossing over on to the tramway lines. The new market cross was placed at the base of the tower—the two on an island—the entrance to the cross being through the tower. The cross was treated in the traditional manner, and the elevations of the buildings were intended to harmonise as far as possible with the iron steeple. The course adopted doubtless sacrificed a certain amount of floor space and, as a result, revenue; but it was felt that an opportunity had occurred to create an improvement which, while retaining the tower on its historical site, would enable it to take its place naturally in the present stream of traffic, as the conditions under which it was built have passed away for ever. Messrs. John McKissack & Son and William Friskin, A.R.I.B.A., were joint architects.

* According to the "Annals of Glasgow" the tunes were arranged as follows:—

Sunday—Easter hymn.
Monday—"Gilderoy."
Tuesday—"Nancy's to the green wood gane."
Wednesday—"Tweedside."
Thursday—"The Lass o' Patie's Mill."
Friday—"The last time I came o'er the muir."
Saturday—"Roslin Castle."

THE President and Council of the Royal Academy have selected the following works exhibited at the Royal Academy for purchase under the terms of the Chantrey bequest: "A Secret" (an oil painting, No. 10 in Room I.), by Mr. Fred Appleyard; "A Vision of the Sea" (an oil painting, 69 in Room II.), by Mr. Mark Fisher, A.R.A.); "The Bather" (a marble statue, No. 1,003 in the Lecture Room), by Mr. Albert Toft.

THE trustees of the ancient Hospital of St. Cross, Winchester, have just carried out an interesting restoration. On the east side of the quadrangle is the ambulatory, above which is a long gallery or range of apartments, traditionally said to have been the infirmary, and called the Nunnes Chambers, from the three hospital nuns appointed by Cardinal Beaufort to attend the sick. This part of the building, the substance of which is earlier work, was rebuilt by Robert Shirborn, Master, in the reign of Henry VII., but in all probability the buildings over the ambulatory were constructed by Henry Compton, Master, in the reign of Charles II., whose name appears beneath an oriel window. The front of this building was covered with somewhat ugly rough cast, but under the direction of Sir T. E. Jackson, Bart., R.A., the whole of this has been removed, disclosing delightful timber and plaster work.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the annual general meeting on Monday last, the President, Mr. Ernest Newton, A.R.A., in the chair, the annual reports of the Council, of the Board of Architectural Education, and of the Standing Committees were presented, received, and adopted.

In the report of the Council it is stated that the present subscribing membership of the Royal Institute is 857 Fellows, 1,713 Associates, fifty-four Hon. Associates, making a total of 2,624. During the official year since the last annual general meeting twenty-nine Fellows have been elected, fifty-seven Associates, and three Honorary Associates.

There are 2,017 Licentiates on the roll. Since the publication of the last annual report fifteen Licentiates have passed the examination qualifying for election to the Fellowship, and twelve of these have been duly elected as Fellows.

The Progressive Examinations were held in June and November-December 1914. The Preliminary was held in London, Birmingham, Bristol, Cardiff, Dublin, Glasgow, Leeds, Liverpool, Manchester, and Newcastle. The Intermediate was held in London, Belfast, Bristol, Cardiff, Dublin, Glasgow, Leeds, Liverpool, Manchester, and Newcastle. The Final and Special Examinations were held in London, and the Special Examinations for candidates overseas in July 1914 in Melbourne, and in December 1914 in Toronto. The Council desire to record their thanks for the valuable services rendered by the Honorary Secretaries and the Examination Committees of the various Allied Societies. The results are shown in the following table:—

	Admitted.	Exempted.	Examined.	Passed.	Relegated.
Preliminary examination ...	227	73	154	111	43
Intermediate examination	163	48	115	66	49
Final & special examinations	133	—	133	62	71

The Ashpitel Prize was awarded to Mr. George Eric Francis.

The Statutory Examination qualifying for candidature as district surveyor in London, and for candidature as building surveyor under local authorities, was held in London in October 1914. There were five candidates, of whom two passed.

The second studentship at the British School at Rome awarded under the Henry Jarvis Bequest was awarded to Mr. Ernest Cormier, who is now in residence at Rome, and the Henry Jarvis Scholarship at the Architectural Association was awarded to Mr. A. B. Hamilton. The competition for the scholarships and studentships at the British School at Rome will not be held this year on account of the war.

Since the issue of the last annual report the Council have made the following grants:—

Architectural Association	£350	0	0
Architectural Association (from the Anderson-Webb Fund)	250	0	0
Architects' War Committee Special Relief Fund	250	0	0
Exhibition of Architecture, Paris, 1914	281	0	0
Library Fund	200	0	0
Prince of Wales's Fund	105	0	0
Architects' Volunteer Training Corps	50	0	0
Architectural Association Sketch Book	25	0	0
Royal Architectural Museum	21	0	0
British School at Rome	21	0	0

The Royal Gold Medal was awarded to M. Jean Louis Pascal for his distinguished services as a teacher of architecture and for his executed works as an architect. M. Pascal was unfortunately prevented by delicate health from being present at the Royal Gold Medal meeting, but the medal was received on his behalf by M. Roux, of the French Embassy.

It has been decided to award the medal this year to Mr. Frank Darling, of Toronto, for his executed works as an architect. His Majesty the King has graciously signified his approval of the award, and the medal will be presented to Mr. Darling at the general meeting on June 21.

More than 1,200 members of the architectural profession are now embodied in various branches of the Forces, and it has been decided to remit the subscriptions of all members and Licentiates of the Institute who are serving their country in this way.

The prize competitions for the year have been postponed for twelve months, and arrangements have been made to avoid the penalising of candidates for the examinations who have joined the Colours.

A grant of 100 guineas has been made to the National Relief Fund; and the Architects' Volunteer Training Corps, which was formed by the Architectural Association, has received financial and other assistance.

A register of Belgian architects who have come to England as war refugees has been compiled, and some of the privileges of Institute membership have been granted to them during the period of the war.

In conjunction with other artistic and learned societies, the Royal Institute submitted a protest to the American Government against the destruction of buildings and monuments by the Germans in Belgium and France.

The financial difficulties of the Architectural Association, arising from the patriotic action of so many of its members and students, have been sympathetically considered by the Council, who have shown their appreciation of the value of the educational work of the Association by making a special grant of £250 in addition to the usual annual grant of £100, and by making a further grant of £250 from the balance of the Anderson-Webb Fund.

The question of the desirability of drawing up special "war clauses" for use in connection with the R.I.B.A. Form of Contract was very carefully considered by the Council, who had the benefit of the advice of the Practice Committee, and it was finally decided that no official action in this direction was advisable. The course of events in the building trade since the early weeks of the war appear to indicate that this decision was a wise one.

A few days after the beginning of the war the President summoned a meeting to consider what action should be taken in view of the crisis, and as a result of this meeting a committee, known as the Architects' War Committee, was formed, which had the advantage of the services of members of the Architects' Benevolent Society, the Architectural Association, and the Society of Architects, and of architects not connected with any of the architectural societies.

With the aid of two subordinate committees, known as the Selection Committee and the Professional Employment Committtee, a great deal of valuable work has been done. Assistance has been offered and given to the War Office and other Government departments, a substantial contribution to the National Relief Fund has been raised by subscriptions from members of the profession, and a War Relief Fund for Architects has been instituted, which has already been instrumental in relieving distress arising from unemployment in the profession.

The interests of the profession have been safeguarded by the assiduous personal efforts of the President, who has been in constant communication with various departments of the Government since the outbreak of the war.

The usual financial statement appended to this report indicates that, in spite of the adverse effects of the war, the finances of the Royal Institute are in a satisfactory state. The remission of the subscriptions of those members who are serving with the Forces and the reduction in the examination fees paid by students are the principal causes which have led the Finance and House Committee to anticipate a small deficit on the year 1915. When normal conditions again exist it is to be expected that there will be a substantial surplus of income over expenditure.

The liquidation of the Architectural Union Company has now been completed, and the company's lease has been transferred to the Royal Institute.

The report of the Board of Architectural Education states that during the year 469 designs have been received and adjudicated on, and of these 329 have been approved, being a decrease of fifty-five and forty-four respectively on the previous year, this result being doubtless due to the war. These designs have been publicly exhibited in the galleries of the Royal Institute for three days after each adjudication, and a large number of visitors have availed themselves of the opportunity of viewing them. The Council, on the recommendation of the Board, have reserved the galleries for the future for the bi-monthly examination and exhibition of these designs.

The Board have conducted the Royal Institute examinations, and the results as reported to the Council have been published. Candidates for the Final Examination are now required to deposit with the moderator at the end of the first day of the Examination in Design a tracing showing the general lines of his design. An additional three hours on the third day of the examination

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have been allotted to this subject. With the approval of the Council, the Preliminary Examination will be discontinued after June, with the exception of the subjects of freehand drawing and geometrical drawing or perspective; but every candidate for registration as probationer must satisfy the Board that he has attained a sufficient standard of general education. In connection therewith the Board have had under consideration a proposal from H.M. Board of Education with reference to a scheme for improving the existing arrangements for the examinations in secondary schools in England. After consideration of the scheme the Board have recommended the Council to accept a pass in the first examination which the Board of Education propose to institute as satisfactory evidence of the candidates having attained a sufficient standard of general education.

With reference to the Intermediate and Final Examinations, the Board gratefully acknowledge the ungrudging labour which for many years past has been given by the Honorary Examiners to these examinations, but it was felt that with the large number of different examiners for the same subjects it was difficult to maintain a uniform standard for all the candidates, and, after lengthy and careful consideration, the Board prepared a scheme for modifying the examinations, reducing the number of examiners, and recognising their work by payment from the Institute funds. It was found that in all the kindred professional societies which hold examinations the fees paid by the candidates were considerably higher than those in operation at the Institute, and the Board believe that by raising these fees a fund would be formed from which adequate remuneration could be paid to the examiners without trenching largely on the general funds of the Institute. The alterations recommended are that: As to the Preliminary Examination, the fee should remain as at present; for the Intermediate, the fee should be £6 6*s.* instead of £3 3*s.* as at present; the Final fee £6 6*s.* instead of £4 4*s.*; and the Special, £10 10*s.* instead of £6 6*s.* In the two latter cases the examination fees are to cover the entrance fee paid by Associates.

With reference to the Design (Intermediate and Final) and Thesis, it was suggested that at present these examiners should remain unpaid.

The whole of these modifications, which were subsequently approved by the Council, would have come into operation this year had it not been for the outbreak of the war, and it is hoped that the new scheme will be in full working order next year.

The Board, with the approval of the Council, have granted the following specific privileges to candidates who have joined the Colours:—

Candidates for the Intermediate Examination whose testimonies of study are approved to be registered as Students.

Candidates for the Final Examination who have had one or more problems in design approved may be exempted from submitting others.

On the recommendation of the examiners, the time for the written and graphic portions of the Statutory Examination has been extended from one to two days.

The Board, at the request of H.M. Board of Education, have conducted the examination of candidates for the National Scholarships in Architecture. These candidates are required to pass the Intermediate Examination, but are exempt from submitting the testimonies of study required from Institute candidates.

H.M. Board of Education have consulted the Board with reference to the awarding of National Art Scholarships, and have been informed that if the scholarships are to be held at a Final School they should be awarded before candidates have passed the Final Examination, but that if such scholarships are in the nature of travelling studentships they should be awarded after the candidates have passed the Final Examination.

The report of the Art Standing Committee mentions that of many matters which have engaged the attention of this committee during the Session the following are perhaps the most important:—

A proposal to convert the old Grammar School of Edward VI. at Shrewsbury (now a library) into municipal offices was dealt with at some length. Happily the scheme has now been abandoned.

The proposal to demolish the interesting building in Great Queen Street, W.C., known as "Boswell's House," has been the subject of great concern to the committee, who have very carefully considered the matter. Various ways of presenting the case against demolition to the freeholder—both alone and in conjunction with other societies—have been fully discussed. It has been found impossible however, to save the building, which has now been pulled down, but it is hoped that arrangements may be made by which some portion of the façade may be re-erected in one of the galleries of the Victoria and Albert Museum.

This museum, desiring to add to its collection of measured drawings of old work (especially French, German, Spanish, and Scandinavian), invoked the assistance of the Institute with this end in view. The committee is of opinion that the object might perhaps be attained by directing the attention of students and others to it through a suitable paragraph in the Institute Journal.

The scheme now on foot to do away with the present picturesque wooden bridge spanning the Thames at Goring, and to replace it by one of ferro-concrete, has evoked no little dismay. The matter has been discussed at considerable length, with the result that steps are now being taken to influence opinion against the change, or at least to insure that if possible the design of the new bridge shall be in harmony with its surroundings.

A sub-committee has been appointed to consider the incidence of certain sections of the London Building Act upon design. Several meetings have been held by this sub-committee, but the result of its deliberations is not yet available. The question, though difficult and intricate, is one which is felt to be important and worthy of consideration.

The report of the Literature Standing Committee states that the librarian has been allowed to make a further choice of books from the library of the late Mrs. Arthur Cates, through the courtesy of Miss M. Rose (her niece), who has also presented a collection of casts of intaglios.

Through the kind offices of Mr. Arthur Keen, a collection of original drawings by A. W. Pugin was presented by Mr. J. Williams.

The committee have under consideration the advisability of compiling an index of Belgian and French architectural works which have been destroyed during the war in France and Belgium. It is proposed to confine the index to works which already form part or may be added to the Institute collection.

Among the books purchased or presented during the year may be mentioned: Barozzi da Vignole's "Règles des Cinq Ordres d'Architecture"; Bosse's "Les Ordres de l'Architecture Antique," &c.; Ebersolt and Thiers' "Les Eglises de Constantinople"; Joyce's "Mexican Archæology"; Haverfield's "Ancient Town Planning"; Gertrude Lowthian Bell's "Palace and Mosque at Ukhaidir"; La Hire's "L'Architecture civile" (in manuscript); Molmenti's "Venice"; De la Rue's "Traité de la Coupe des Pierres"; Venturi's "Storia dell' arte Italiana" (in continuation); Perrault's "Abrégé des dix livres d'Architecture de Vitruve"; Contet's "Les Vieux Hôtels de Paris"; Yriarte's "Florence" and "Venice"; Hausmann's "The Royal Palace at Buda-Pesth"; St. John Hope's "Windsor Castle"; Guicciardino's "Belgicæ, sive inferioris Germaniæ descriptio"; Gusman's "L'Art décoratif de Rome" (in continuation); Scott's "Architecture of Humanism," &c.; Depage and others, "Les Constructions des Hôpitaux"; Richards's "Report . . . on the Condition, Improvement, and Town Planning of the City of Calcutta"; Ross's "Florentine Villas"; Hewison's "The Runic Roods of Ruthwell and Bewcastle, &c."

The report of the Practice Standing Committee states that the suggested revision of the Institute Handbook on Dilapidations originally published under the ægis of the committee in 1903, and which is now out of print, has been submitted in draft by Messrs. Sydney Perks and Edward Greenop, and is being considered by the committee.

The committee, at the request of the Council, carefully considered the best means of dealing with the difficulties in building operations arising out of the war crisis. They appointed a sub-committee, which interviewed representatives of the builders and obtained their views, and devoted a considerable amount of time and trouble to the drafting of special clauses for insertion in the Conditions of Contract, and to the preparation of a very careful report on the subject. The committee's recommendations, however, were not adopted by the Council.

The Concrete Institute having submitted to the Council a draft form for the standardisation of the measurement of reinforced concrete, this was referred to the committee, and after careful consideration by a sub-committee was approved, with the rider that reinforced concrete should

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be shown on the architect's drawings, and the quantities for it taken off in the usual way. A suggestion that the Institute should take part in a conference on the subject with the Concrete Institute was also approved.

A large number of inquiries bearing upon points of professional practice and kindred matters have been received and dealt with. Of these, nearly one-half were concerned with difficulties arising out of the existing Conditions of Contract and the Schedule of Charges, and it may fairly be anticipated that a large number of the difficulties which arise in the use of both these documents will be removed when their respective revisions have been adopted. Most of the inquiries received, being necessarily of a confidential character, cannot be referred to in detail. In regard to questions as to professional charges, the growing number of cases which have been submitted to the committee by members and Licentiates from all parts of the country asking for advice as to the reasonableness of professional charges, and often accompanied by a considerable mass of documents and drawings, involving the expenditure of a large amount of time and labour for even their cursory perusal and examination, has compelled the committee to decline in future to give opinions on such matters, especially when submitted ex parte, and likely to lead to legal proceedings, unless some matter of principle is involved. In accordance with their established practice, the committee continue to be careful to express no opinion on matters sub-judice or on ex-parte statements, expressions of opinion on which might be detrimental to their brother professionals.

The report of the Science Standing Committee states that the committee regret that till the London County Council decide that revision of the existent drainage by-laws be undertaken, no opportunity will arise to make use of the suggestions for essential amendment and simplification therein which were the outcome of the labours of the sub-committee, who gave much time and careful consideration to this subject.

On the recommendation of the committee, the Council wrote to the Metropolitan Water Board on the subject of a new requirement which the Board were seeking to enforce in regard to the arrangement of lavatory-basin overflows. In the opinion of the committee this requirement and the permissive alternatives were open to grave objection on more grounds than one, and hope was expressed that for the reasons stated in the Council's letter the requirement would be withdrawn. No reply beyond a formal acknowledgment having come to hand, the committee requested the Council to press for a reply and to publish their letter to the Board in the R.I.B.A. Journal, as the committee were of opinion that a continuance of compliance with the requirement by architects and others, in the absence of the requisite information on which to resist it, would prejudice the prompt withdrawal of the requirement hoped for by the committee and the Council. The Council have, however, decided not to publish the correspondence pending receipt of the Board's reply, for which they have pressed.

The Council have at length approved the report and draft specification submitted by the committee last session, and have requested the committee to take steps for the further necessary discussion of the subject with representatives of the Institute of Builders and the Timber Trades' Federation. The Committee have appointed a sub-committee for this purpose.

The committee considered the draft of the L.C.C. (General Powers) Bill, 1915, of which Part III. (Drainage of Premises) and Part IV. (Buildings on Low-lying Land) were concerned with building. With the assistance of a sub-committee, a report on these parts of the Bill was drawn up and submitted to the Council with a recommendation that the Institute should petition Parliament against the Bill. This recommendation was accepted and, at the request of the Council, the committee instructed the Institute solicitors and approved the petition, which was duly lodged. The committee are glad to learn that as a result of strong opposition Parts III. and IV. of the Bill have been withdrawn.

The committee have decided to collect data as to cases of underground water met with during excavations and building operations in and near London.

Information from architects has been invited, and the committee hope to be able to record such information in a manner intended to be of future service to architects for proposed building operations in the area. The value of the record will depend on the extent to which response to the invitation of the committee is made by members of the Institute.

The Council have accepted a recommendation from the committee that the Institute leaflets on dry rot should be supplemented. The committee have been, and still are, engaged in collecting information and preparing a report as to the additional matter to be included in the leaflets, and hope to be in a position very shortly to advise the Council further on the subject.

The important work of the sub-committee considering the construction of belfries and effect of vibration on buildings has continued, but it has been found necessary, owing to the scope of the reference, to confine the sub-committee's attention for the present to the construction of belfries.

In view of the nature of some of the inquiries which reach the committee, they have laid down as a general principle that inquiries which prima facie show that the inquirer is deficient in knowledge or experience should not be answered by the committee. They consider that the proper course for such inquirers is, as in the medical and legal professions, to obtain advice from more expert practitioners and pay for it.

NATIONAL ART TREASURES.

TOWARDS the close of 1911 a Committee of Trustees of the National Gallery was appointed by the Trustees to inquire into the retention of important pictures in this country, and other matters connected with the national art collections. The committee was a small one, consisting of Earl Curzon of Kedleston (Chairman), Sir Edgar Vincent and Mr. R. H. Benson (Trustees), and Sir C. Holroyd (Director). Although their report was signed in December 1913, it was not made public until last week.

This investigation early revealed the fact that the Old Masters' problem was one not merely of finance, or opportunity, or policy, but of administration and organisation, and that more scientific and effective co-ordination might be a material factor in producing better results. Abundant evidence was also speedily forthcoming of the urgent need for such an inquiry, as the export or exodus of pictures from private collections was proceeding at a rate calculated to cause serious apprehension, the pictures going for the most part either to the Kaiser Friedrich Museum in Berlin and the Metropolitan Museum in New York among public collections, or to such private collections as those of Pierpont Morgan, Widener, Gardner, Johnson, Huntingdon, Frick, Clark, and other collections in the United States. The value of paintings of the highest order has appreciated to an extent that is commonly spoken of as amazing, but the committee believe it is probably small compared with the figures which will be realised at no distant date. Prices of £100,000 have been offered, and in more than one case given, for individual pictures, and it is considered likely that such a price will be no uncommon thing in the near future.

The committee emphatically dispute the view that our National Gallery, as a collection representative of all schools, has reached a stage of perfection with which the nation may rest content. A consideration of the painters who are still either wholly unrepresented or are inadequately represented there is sufficient to prove how unsound any such generalisation would be. Such deficiencies could be supplied from pictures of high importance still remaining in private collections in the United Kingdom. It should be remembered, however, that some of the omissions in the National and Tate Galleries are to some extent made good in other and neighbouring institutions. The four national collections of pictures in the Metropolis are the National and Tate Galleries, the National Portrait Gallery, the Victoria and Albert Museum, and the Wallace Collection. Some of the greatest authorities desire earnestly for a scheme of federation of these collections, which would then be under the control of a single and central Board. The British Museum should also, they contend, be included.

Before arriving at any conclusion concerning the adequacy or inadequacy of existing grants, the committee made a careful analysis of the assistance given by the Government in more forms than one to the acquisition and exhibition of valuable pictures by the nation, and they express a desire at once to make frank and full acknowledgment of the service which has been rendered by the State to the cause of art in this country.

The income available to the Trustees of the National

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Gallery for the purchase of pictures is derived from (*a*) Government grants, both ordinary and extraordinary; (*b*) pecuniary bequests and legacies; (*c*) private contributions; and (*d*) the National Art-Collections Fund, which purchases for immediate presentation *inter alia* to the National and Tate Galleries.

Ever since 1889 the ordinary Parliamentary grant for purchases has amounted to £5,000 a year, together with such extraordinary grants as Parliament might think fair to make from time to time. For more than twenty years previous the annual ordinary grant had been exactly double that meagre amount, though the Trustees were not then allowed, as now, credit for any unexpended balance. The present position is, therefore, that while Parliamentary grants are less than at a much earlier period, the market price of purchases is incomparably higher, and the purchasing power of the Trustees is consequently reduced in both ways. The average price of purchases from the total available resources of the National Gallery during the last two decades has increased by no less than 536 per cent. It is clear that the existing resources of the National Gallery for the purchase of pictures are utterly inadequate, as judged by every test that can fairly be applied, but most of all by comparison with the enormous and unarrested appreciation in the value of the objects which they are designed to secure, and with the vastly superior resources enjoyed by those who are our most formidable rivals.

We conclude with the committee's summary of their recommendations:—

1. That it is inadvisable to legislate on the lines of the Italian law for the restriction or prohibition of the export of works of art from this country.

2. That it is inadvisable to place an export duty on pictures or works of art leaving this country.

3. That it is inadvisable to impose a stamp duty on sales of works of art in this country.

4. That his Majesty's Government be requested to increase the ordinary annual Parliamentary grant to the Trustees of the National Gallery from £5,000 to not less than £25,000, and that the Trustees be not required to return any unspent balances at the end of the year.

5. That notwithstanding such increased grant, if made, the Trustees would not be justified in giving a pledge never to apply to the Treasury for extraordinary aid; but, on the contrary, that in the case of a limited number of masterpieces (many of which could now be named to the Government) an extraordinary grant or grants may from time to time be required in the future as they have been in the past to save such masterpiece or masterpieces from being lost to the nation.

Special Art Taxes.

6. That in the event of his Majesty's Government being unable or unwilling to make the suggested additional grant either in whole or in part, the following financial expedients be commended to their attention: (*a*) That a tax be placed upon the gross proceeds of sales of works of art by public auction in excess of a fixed amount for the individual sale—such tax to be paid to the Treasury by the auctioneer and the incidence of taxation be carefully considered, so that the burden shall not be shifted on to the seller; and that the proceeds of such tax be added to the grants available for purchase by the various national museums and galleries in proportion as the proceeds are derived from the sale of pictures, water-colours, and drawings on the one hand, or other works of art on the other; (*b*) that the proceeds of all death duties paid upon works of art be separately kept and recorded, and that they be added to the purchasing funds of the various national museums and galleries; (*c*) that all receipts from (*a*) the sale of, and royalties on, catalogues and photographs, and (*b*) admission fees in the National and Tate Galleries, be credited to the funds of the Trustees and become available for the purchase of pictures for the nation.

7. That every possible assistance and encouragement in the manner indicated in this report be given to the National Art-Collections Fund.

8. That steps be taken to constitute a society of "Friends of Art" on the general lines advocated in Lord Curzon's memorandum.

9. That it is not desirable to draw up an official or public register of works of art in this country, or to legislate in order to compel their owners to grant rights of pre-emption or option to the nation, or otherwise to restrict the free enjoyment and disposition of such works.

10. That the Trustees and Director of the National Gallery shall undertake the task of approaching confidentially the owners of collections containing pictures which they consider either essential or highly desirable for the nation, and shall endeavour by private negotiation to obtain the offer of the refusal of such pictures for the nation.

11. That in return for such offer, or in the event of the sale to the nation of the objects in question, such privileges or concessions be made by the Government to the owner as may be found practicable.

12. That in the case of sale to the nation, the proceeds of the sale shall be exempted from aggregation for the purpose of estate duty on the death of the seller.

Finance Act Suggestions.

13. That the question of revising the Finance Acts of 1894, 1896, and 1910, in so far as they deal with works of art, be commended to his Majesty's Government with a view to obtaining for the nation certain advantages in return for the exemptions granted.

14. That steps be taken to carry out the recommendations, with regard to pictures and drawings, of the Departmental Committee appointed by the President of the Board of Education in 1908 to draw up a plan for the re-arrangement of the Victoria and Albert Museum.

15. That, as recommended by that Committee, the oil paintings in the Victoria and Albert Museum be, as far as possible, transferred to the Trustees of the National Gallery, and that where this is not possible the difficulty be met by an extended policy of loans, the Victoria and Albert Museum only retaining such collection of oil paintings in the future as may be required for the illustration of decorative art.

16. That, while the British Museum and the Victoria and Albert Museum shall retain such water-colours as are required for their respective purposes (in the former case the illustration of the methods of artists, and in the latter case the illustration of decorative art), an attempt be made to co-ordinate the National Collection of water-colours, and to provide for a permanent exhibition of this characteristic branch of British art by the erection of a gallery specially devoted to this purpose, the majority of the water-colours being stored in it under a Print Room system, and temporary exhibitions of specially selected pictures being always on view. Contributions to these exhibitions should be made by the various National Galleries or Collections.

17. That with a view to the formation of such a gallery the duty of purchasing water-colours for the nation shall (except in so far as it is exercised for the above-named objects by the authorities of the British Museum and the Victoria and Albert Museum) devolve in future upon the Trustees of the Tate Gallery out of funds to be provided for the purpose.

18. That the formation of a gallery of modern foreign pictures and sculpture, including in such term works produced since 1850, is a matter of urgent importance.

19. That the nucleus of such a gallery be provided by the pictures and sculptures in the National Gallery and in the Victoria and Albert Museum respectively.

Future of the Tate Gallery.

20. That the object to be kept in view for the Tate Gallery shall be its gradual conversion into a gallery of British art (and not exclusively modern British art), the National Gallery continuing to exhibit the acknowledged masterpieces of the British school alongside of the masterpieces of foreign schools, but the remaining British pictures being transferred by degrees to the Tate Gallery. On the other hand, there should be transferred from time to time from the Tate Gallery to the National Gallery such pictures as have won recognition as masterpieces.

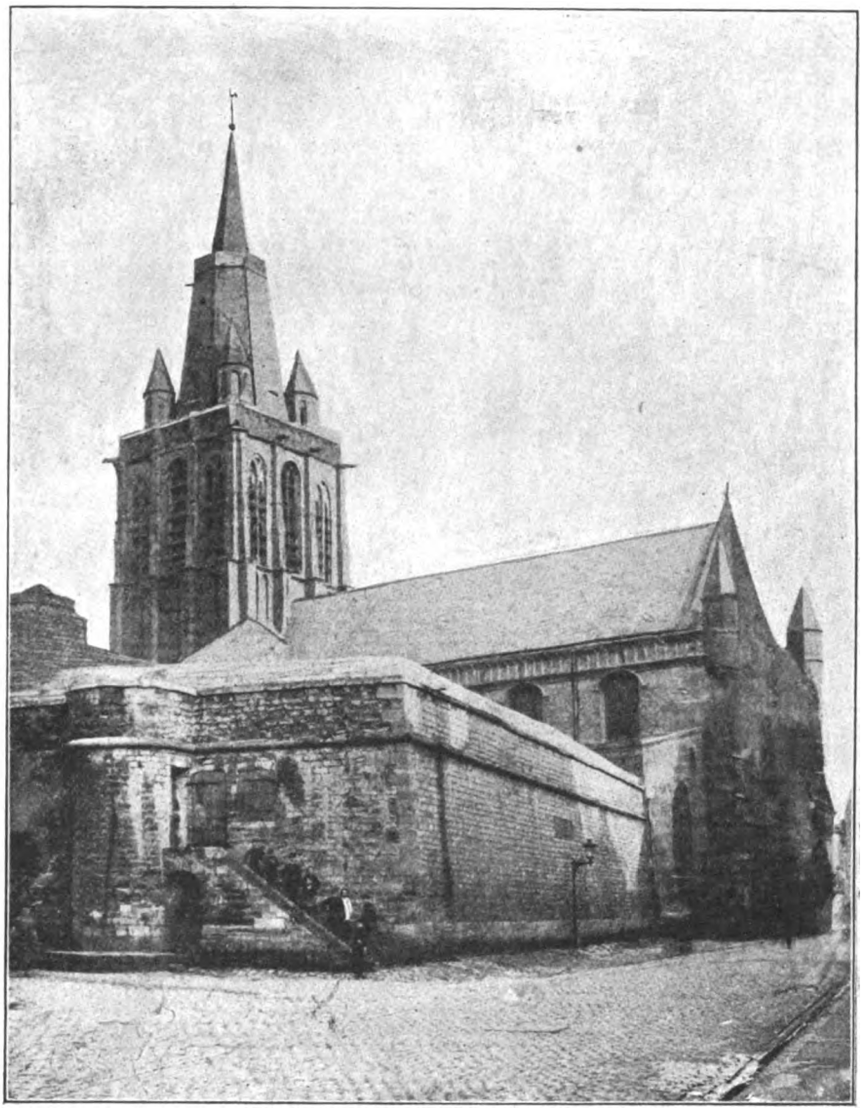
21. That this object is incapable of attainment so long as the pictures purchased under the Chantrey Bequest are hung indiscriminately on the walls of the Tate Gallery.

22. That legislation be undertaken in order to place the Chantrey Bequest on a sound footing and to vest its administration in the Trustees of the Tate Gallery.

23. That with a view to such legislation the Trustees of the National Gallery shall notify the Treasury and those responsible for the administration of the Chantrey Bequest that they are not in future prepared to accept pictures (or sculpture) in the selection of which they have had no voice, but for which, irrespective of merit, they are nevertheless expected to provide accommodation.

24. That, failing such legislation, the Trustees shall

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CALAIS.—EXTERIOR OF NOTRE DAME.

exercise in a more efficacious manner their existing rights of storage and loan, with a view to withdrawing from permanent exhibition such works as are unworthy of that honour, and to converting the Tate Gallery into a truly representative British Collection.

25. That the administration of the Tate Gallery be transferred to a new Board of Trustees, such Board to be constituted partly by the Trustees of the National Gallery from their own number, including the Director of the National Gallery, partly from other persons appointed for their special interest in, or knowledge of, modern art; that the Keeper of the Tate Gallery be appointed its Director, and that meetings of the Board be held at the Tate Gallery.

The Chantrey Bequest.

26. That, unless the income from the Chantrey Bequest can be placed at the disposal of the new Board, an annual grant be made to it from the enhanced grant proposed to be made by his Majesty's Government to the National Gallery as a whole.

27. That the policy of nominating expert persons, with advisory powers only, to assist the Trustees and Directors of the National and the Tate Galleries in cases where they may require such assistance, be seriously considered.

28. That the staffs of the National and Tate Galleries be reorganised on the general lines suggested in the Report.

29. That a form of bequest, as suggested in this Report, be recommended to future benefactors of the National Collections.

30. That the principle of storage be accepted as a cardinal principle on which the National and Tate Galleries shall be administered, and that all pictures which for reason of space or otherwise it is not considered desirable to exhibit permanently, shall be stored in the basements in such way as to be easily accessible to students, and for purposes either of loan or of temporary exhibition.

31. That the system of loans of pictures by the National and Tate Galleries, for which provision is already made by law, be applied on a greatly extended scale, in order to encourage provincial and colonial galleries and to raise the standard of art education among the people.

32. That the existing powers of loan, which are at present confined to the United Kingdom, be extended by legislation to the Overseas Dominions of the Crown and to foreign countries; that power of exchange with galleries in the United Kingdom and abroad be simultaneously obtained; but that, as a general principle, the policy of long loans, in return for similar loans, be adopted in preference to that of definite exchange.

33. That in consequence of the adoption and extension of the principles of storage and loan the Trustees will be able in future to accept as gifts or bequests pictures of high merit which for various reasons they are at present compelled to refuse.

34. That it is unnecessary to extend the existing powers of sale possessed by the Trustees.

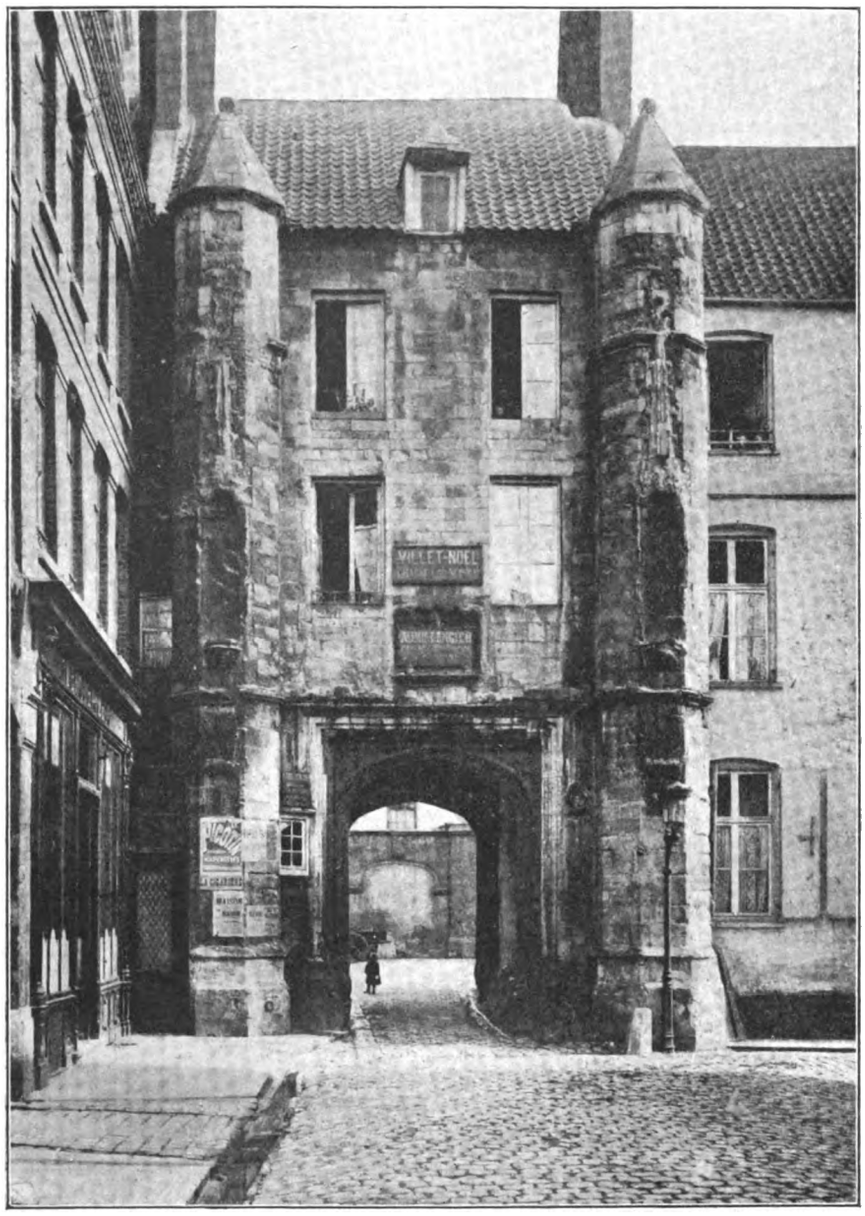
35. That the suggestions contained in this report be adopted in regard to (*a*) photographs, (*b*) catalogues, (*c*) the National Gallery Library, (*d*) framing.

CALAIS.

By J. TAVENOR PERRY.

Too many Englishmen are content with such modern history as their daily paper affords, and thus have no sentimental regard for the old town of Calais, however frequently they may have landed at its pier; but the

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CALAIS.—GATEWAY TO HOTEL GUISE.

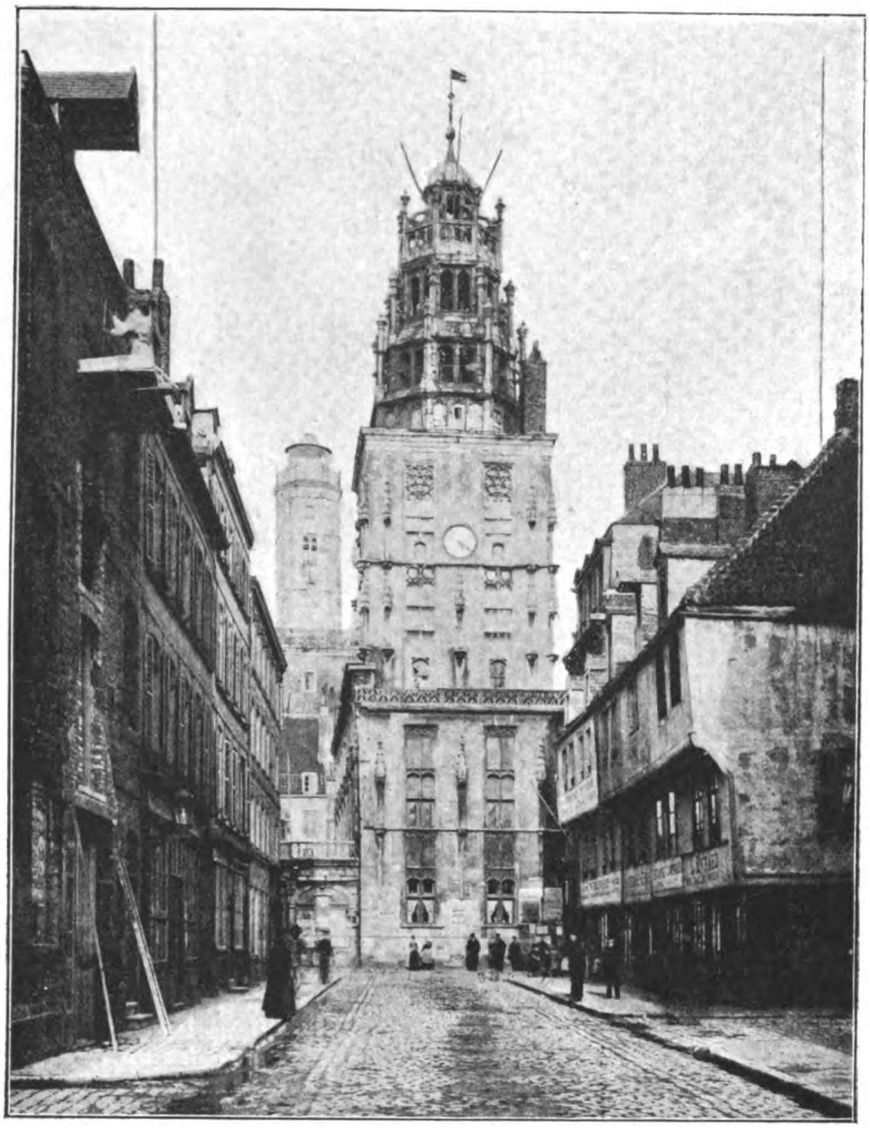
recent attack on the place by German bombs, and the arrival in London of Rodin's Burghers may have stirred some memories of Queen Mary's heart and the writing on it that no *post-mortem* examination ever disclosed. Even architectural students on continental sketching tours intent rarely break their journey to study the singular admixture of French and English detail on its public buildings. But although the history of our country's connection with the place is fascinating enough, whether read in the pages of Froissart or Froude, we will confine ourselves to a description of such examples of architecture as we are able to show by our photographs, and give as an excuse for our article, if any excuse is necessary, the concluding words of John Louis Petit to the second volume of his "Church Architecture." "As the tourist on arriving at Calais is generally more intent upon his journey to Paris, or his return to England, than upon the curiosities of the place, I conceive a sketch of its church may be as great a novelty as any I have been able to present to him."

The old church of Notre Dame, so far as the existing structure is concerned, was built entirely within the period of the English domination of the locality, and exhibits many of the characteristics of our Perpendicular style. No trace of any earlier building seems ever to have been discovered on the site; in fact, all old Calais belongs either to the period of our occupancy or to a subsequent time, and no remains of the town captured by Edward III. are apparent. The church must have been begun soon after the town fell in 1347, for the new building was sufficiently complete for the marriage of Richard II. and Isabella of France to be celebrated within its walls in 1396.

It is a large transeptal building with, originally, a square east end, and a lofty tower crowned with a spire at the crossing. The structure is mainly of brick, but there is some stone ashlar at the west end, and the cylindrical piers of the nave arcade and the tracery of the windows are also of stone. There is no triforium, but a good clerestory of four-centred arches filled in with Perpendicular tracery; and the vaulted roof, which may be an entirely modern restoration, is so low as to give the interior a squat appearance. The tower is pierced on each face with three two-light belfry windows, and is surmounted by a brick truncated spire with angle turrets. The north transept has large bastion-like projections at the corners with flat roofs, as if they had been built, or at least adapted, to carry guns, and the spire and pinnacles are set well back from the parapets so as to form a defensive platform on the main tower. There is a fine Renaissance marble screen to the choir bearing the date of 1626; and the marble high altar is by Adam Lottman.

At the end of the dismal Rue de la Prison, in which still stands the inn where once lodged Laurence Sterne and Sir Walter Scott, is what remains of the Guildhall of the Mayor and Aldermen of the Staple of Wool established here by Edward III. in 1363, which consist of a large quadrangle exhibiting but few traces of antiquity, and an entrance gateway which stands fairly perfect. The Corporation thus housed was a very important one; and its members were so frequently passing backwards and forwards between France and England that they were granted permission by the Pope to use a portable altar, a very late date for such a privilege.

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CALAIS.—BELFRY OF PHAROS.

The gateway, as can be seen from our view, is a very fair example of Tudor work with angle turrets and niches; and the groining of the archway still bears the rose and portcullis on its bosses. Henry VIII., in his frequent visits to the Continent, made it his lodging; but when the French recovered possession of the town it was presented to the successful captor, and it has since been known as the Hôtel de Guise.

The old Hôtel de Ville in the Grande Place, with its adjoining pharos, still retains many traces of late Gothic and Renaissance detail. The very picturesque lantern which crowns the belfry and contains the carillons is all covered with lead, and it forms with the pharos, known as the Tour du Guet, and said to have been built in 1214, a very pretty street view, as shown by our photograph. Though the Germans have done some damage to the place, these historic buildings have, so far, escaped.

The charming story of the Burghers of Calais and Edward III. as told by the chronicler and portrayed by Rodin, has had much doubt thrown upon it, and by many Eustace de St. Pierre is believed to have been a traitor who sold the place to the English king. There is also a legend that in after years he had to beg his bread through France, which, if it be true, would make the erection of his bust, standing now before the Hôtel de Ville, a piece of irony, reminding one of the epitaph on the starved poet in Westminster Abbey, whose

"fate is here an emblem shown—
He asked for bread and he received a stone."

We cannot leave Calais without a glance at the Town Gate erected by Richelieu and etched by Hogarth—though a comparison between our photograph and the etching may suggest that our very realistic painter was, for once in the way, an impressionist.

MANCHESTER SOCIETY OF ARCHITECTS.

THE annual general meeting of the Manchester Society of Architects was held on the 28th ult. at 36 Spring Gardens, Manchester. The report and accounts were approved and adopted, and the following officers and members of Council were elected:—

President.—Mr. F. B. Dunkerley, F.R.I.B.A.

Vice-Presidents.—Messrs. J. B. Gass, F.R.I.B.A., and A. W. Hennings, A.R.I.B.A.

Hon. Secretary.—Mr. Isaac Taylor, F.R.I.B.A.

Assistant Hon. Secretary. — Mr. J. T. Halliday, A.R.I.B.A.

Members of Council.—Messrs. John Ely, H. Q. Farmer, W. C. Hardisty, Edward Hewitt, Hugh Healey, P. D. Lodge, A. J. Murgatroyd, Paul Ogden, J. H. Sellers, J. H. Woodhouse, P. S. Worthington, and W. C. Young.

The aggregate membership is 271—viz., 118 Fellows, 111 Associates, and forty-two Students. This shows a decrease of one compared with last year.

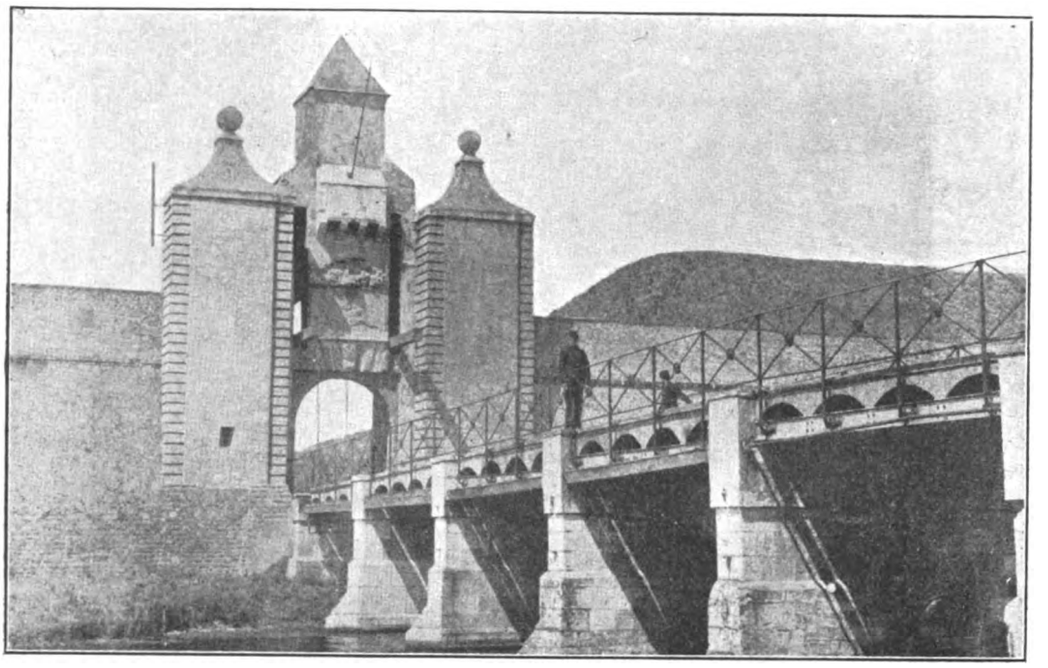
From the annual report we give the following extracts:—

On July 9 last a deputation from the Council of the Manchester Society of Architects met a sub-committee of the Manchester Education Committee, and the President submitted the following points for their consideration:—

Our object in waiting upon you to-day is to press the claims of architects in private practice in this city for some recognition and some share in the work of designing the ever-growing number of new schools which are erected in the district.

For many years it has been your practice to have the whole of this work done by your official staff, and though this may in some ways be a convenient method for yourselves, we are convinced that it is not in the public

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CALAIS.—TOWER GATE.

interest, and that it inflicts a grave injustice on the architects of this city.

Many of our number have made a special study of school architecture, and have designed and carried out successfully such buildings in the surrounding districts, and, in fact, in all parts of the country, and we feel that it is extremely hard that in this city, the city in which we live and work and pay our rates, the doors of the Education Offices should be closed in our faces.

We wish to remind you that we are ratepayers, and as such have to bear our share of the cost of maintaining the official architectural staff which carries out the work which should rightly be ours.

The duties of an official architect should, in our opinion, be almost entirely of an advisory and consultative nature. He should not be entrusted with the charge of public works of importance, and for these reasons:—

(1) A public official has not the same interest in keeping down the cost of his buildings. Though doubtless not necessarily wilfully extravagant, he cannot be so keen as the architect in private practice to keep his costs low, as the latter knows that a reputation for extravagance is perhaps more detrimental to the continued success of his practice than anything else.

(2) An official can never have the same stimulus and incentive to the study of new methods of planning, new materials, or new forms of construction as a private architect. The latter, to make progress in his profession, must ever be a keen student of the best work of the day, and must always be ready to profit by the experience of others.

We make no charges against your present architectural staff, who doubtless, under the able leadership of the late Mr. Whyatt, have served you conscientiously.

We think it would be interesting to everybody if we could obtain the official costs of the principal schools erected during the past few years. These figures were promised to us on a former occasion, but have so far not been forthcoming, and without these we can make no comparison with schools erected in Salford or other adjoining districts.

We do not, however, wish to labour this point to-day, but rather to ask for your patient consideration of our case on the grounds of common justice.

Gentlemen,—You are a body who are largely responsible for the education of the local architect, and you have shown your interest in supporting the Manchester School of Architecture, and thereby securing a better training for the young architect than has formerly been available.

Is it not, gentlemen, a little illogical to carefully train up the young architect, and then, in after years, to refuse him his proper chance in the development and adornment of this great city?

A report of the meeting was subsequently sent to each member of the City Council, as well as to the members of the M.S.A.

On February 15, 1915, the Manchester Education Committee passed the following resolution:—

Upon further representations from the Manchester Society of Architects, resolved that they be informed that the Education Committee have given careful consideration to the matter on several occasions, and are unable to recommend any departure from the policy already adopted by the Education Committee in regard to the designing of schools—a policy which was only adopted after long and careful consideration, and which they see no reason to alter.

At a subsequent meeting of the City Council the question of official architecture was debated, and it was decided to appoint a committee to inquire into the whole question.

As in the case of all similar institutions, the operations of the Society have been very much affected by the outbreak in August 1914 of the great European War.

So far as is known, thirty-eight members of the Society have in one capacity or another joined his Majesty's Forces, and their names have been recorded on the President's Roll of Honour as under:—

Fellows.—Q. M. Bluhm, A. E. Corbett, C. Harold Heathcote, Claude Paterson, and Gerald Sanville.

Associates.—Stanley Birkett, J. S. Beaumont, George Barlow, J. B. F. Cowper, J. M. Clarke, J. A. Clarke, Frank Dyer, J. H. Gibbons, J. B. Greenall, G. H. Goldsmith, S. A. Harper, Theodore Herford, J. K. Hopkinson, R. A. Lawton, J. G. Martin, W. H. Mitchell, James Norquoy, C. H. Potter, J. H. Somerset, R. V. Sturgeon, F. Williamson, and J. H. Worthington.

Students.—Roy Bowes, T. O. Bushell, T. V. Duncan, J. Edwardes-Evans, G. B. Howcroft, W. O. Jones, Kenmure Kinna, H. W. Price, F. C. Saxon, J. B. Teasdale, and W. M. Tripp.

The Council has passed the following resolution relating to the annual subscriptions of these members: "That the annual subscriptions of all members actively engaged in his Majesty's Naval and Military Forces be remitted for the period they are so engaged, and that they retain all the rights and privileges of membership during such period."

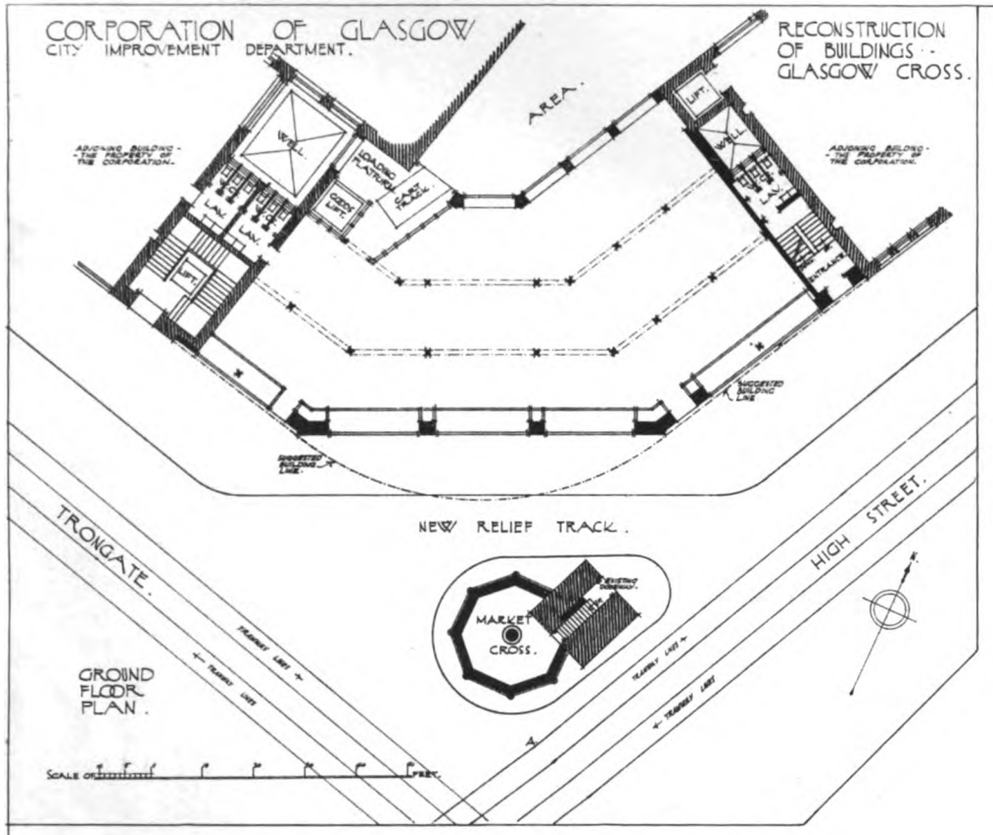
The outbreak of war and the serious consequences entailed on the profession in consequence thereof decided your Council to forego the holding of the annual dinner last year, and also to postpone the celebration of the Society's Jubilee, which was attained on April 8, 1915.

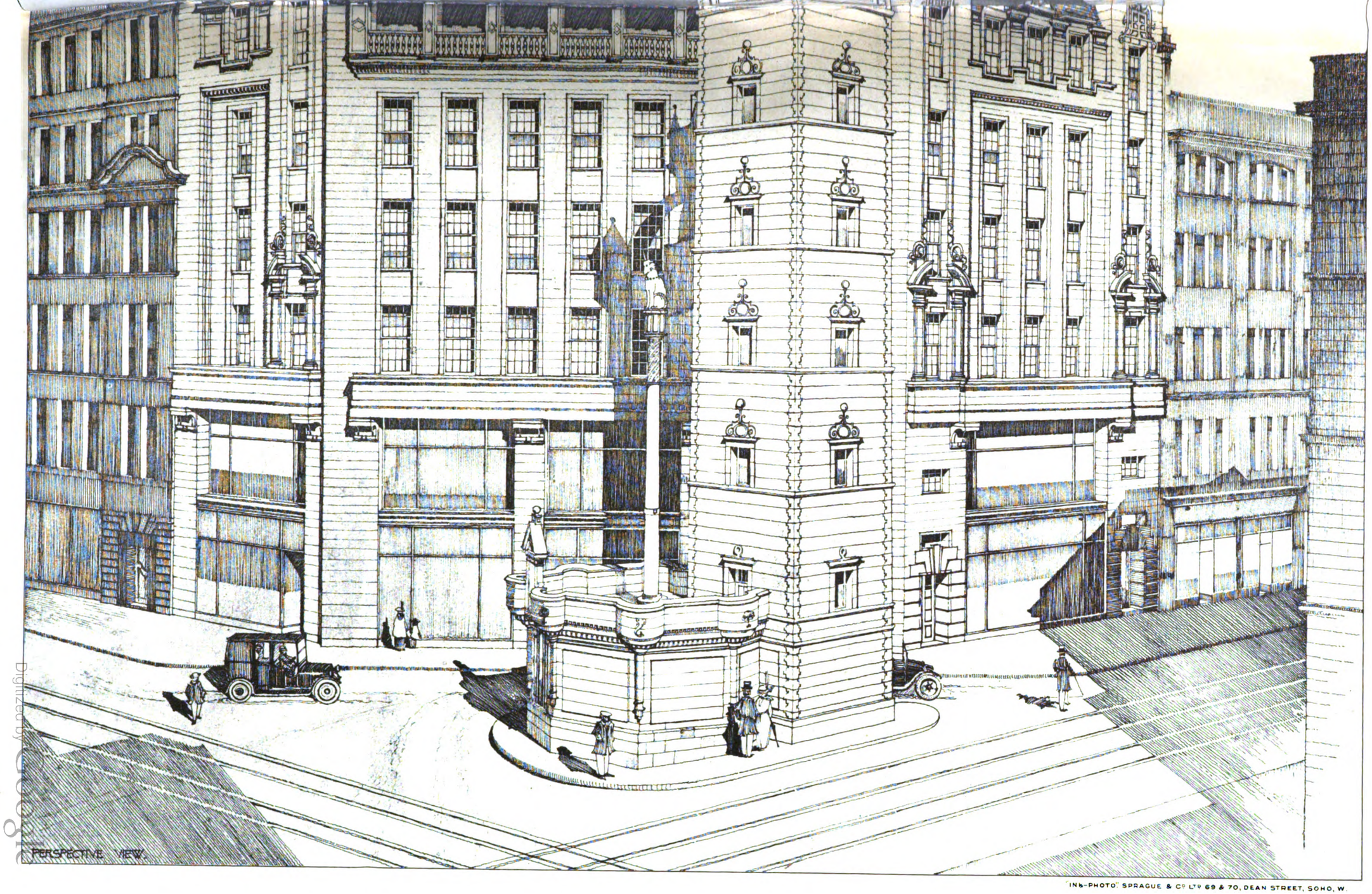
About eight years ago the members passed the following resolutions regarding the utilisation of the site in Piccadilly formerly occupied by the Manchester Infirmary: "(*a*) That in the opinion of this meeting the Infirmary site should be left as an open space in perpetuity; (*b*) that in the

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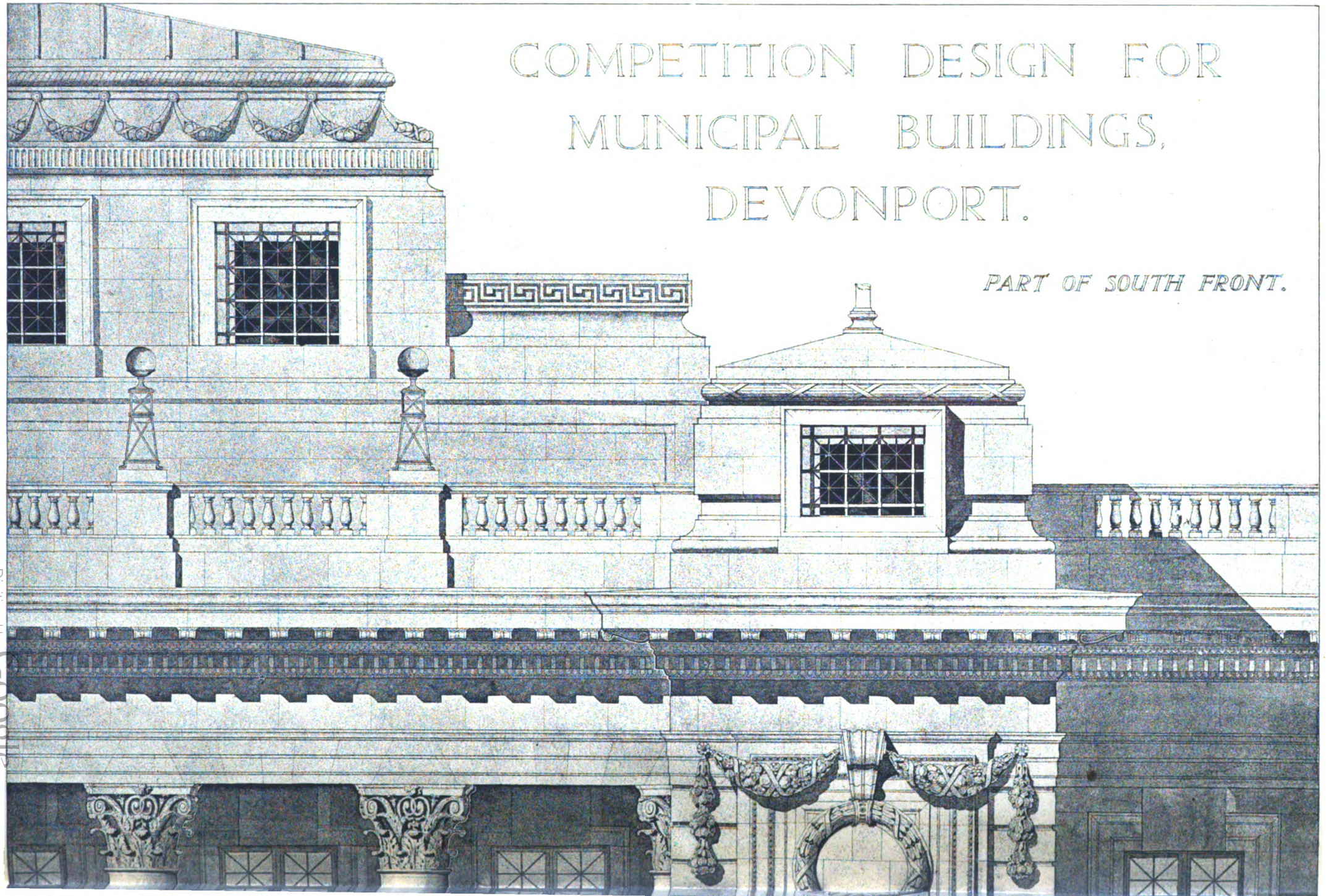
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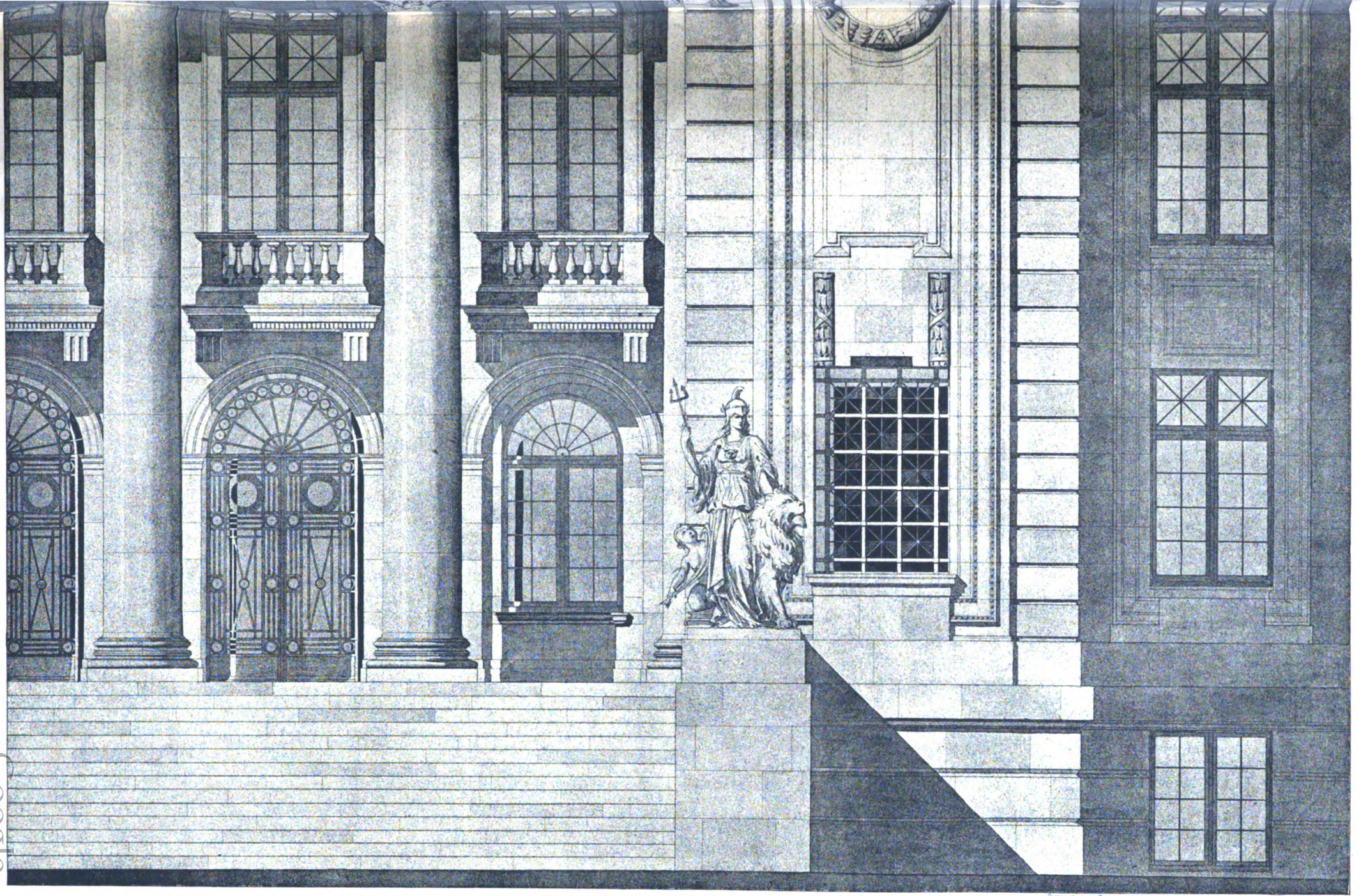
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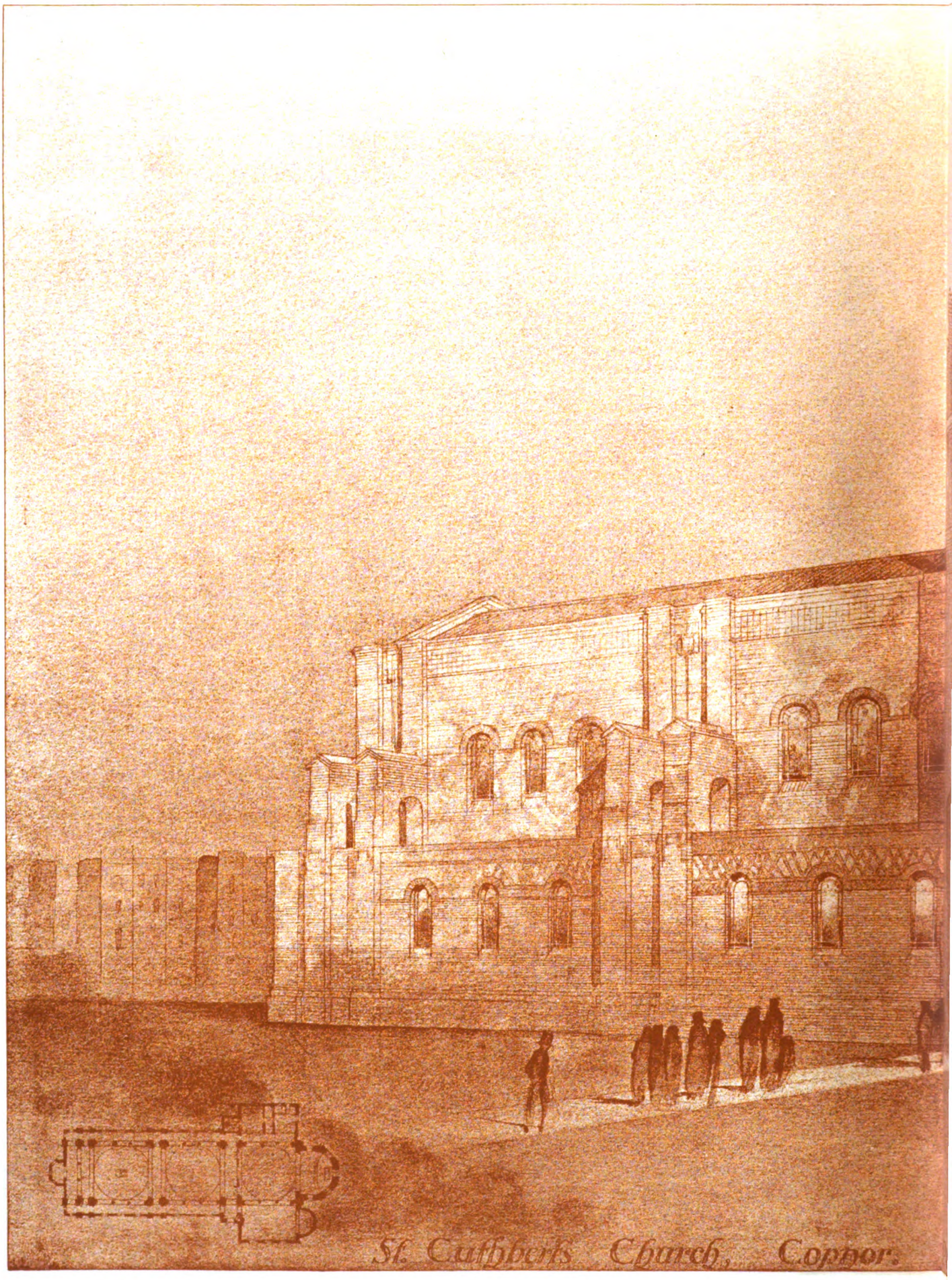
Messrs. EDWIN T. HALL, F.R.I.B.A., AND E. STANLEY HALL, M.A., A.R.I.B.A.

(Royal Academy Exhibition, 1914.)

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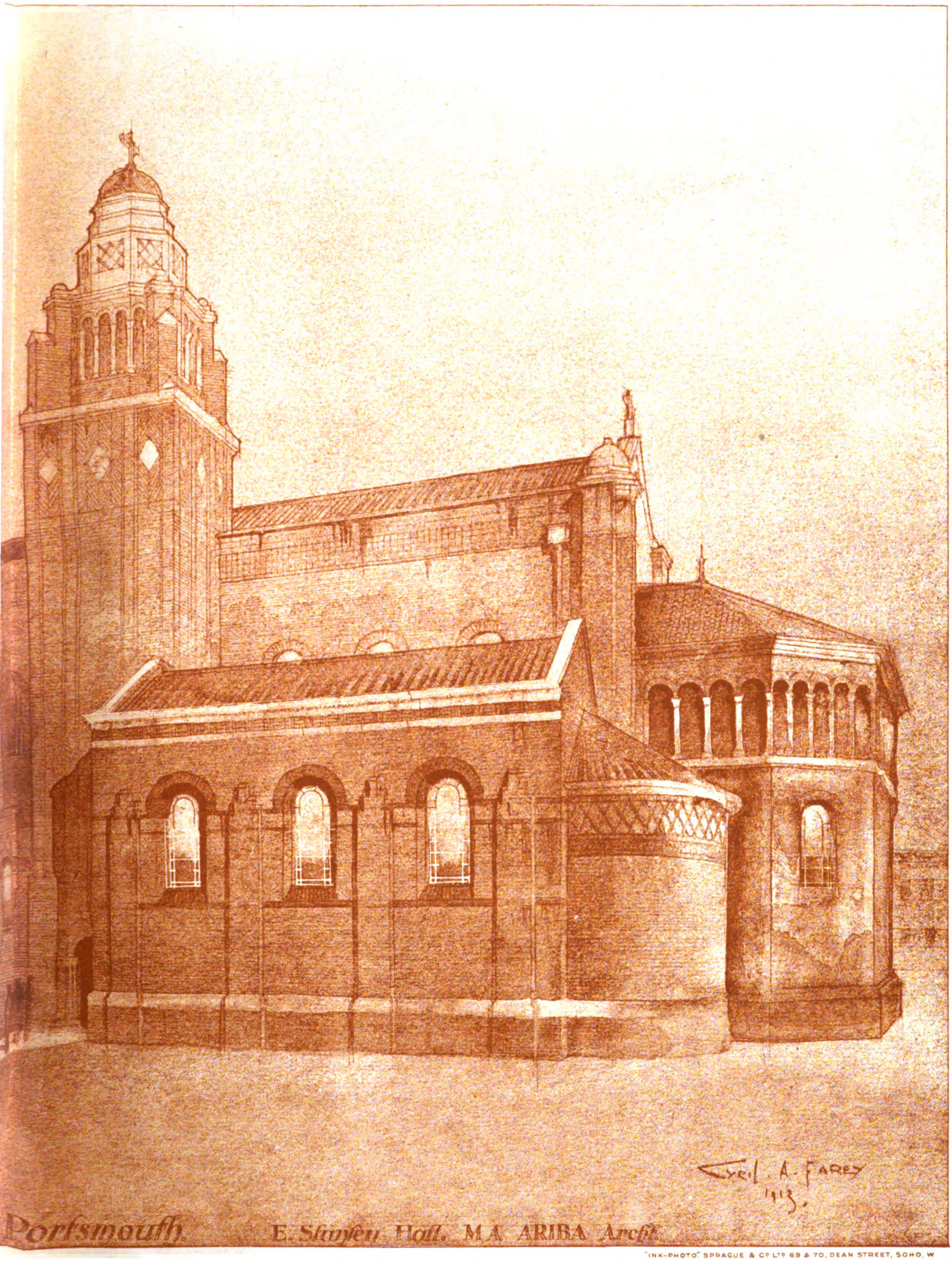


St. Cuthberts Church, Coppor.

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Portsmouth. E. Stanyer Hall. M.A. ARIBA. Archt.

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opinion of this meeting sites for the Art Gallery and Free Reference Library should be purchased on opposite sides of Oxford Road, between Oxford Road (M.S.J. and A. Railway) Railway Bridge and All Saints' Church."

At a special general meeting of the members held on January 13, 1915, the question was reconsidered in view of the new conditions, and the previous resolutions were rescinded and the following resolution, which has been communicated to the Manchester Corporation, was passed: "That this meeting of the Manchester Society of Architects views with regret the continued delay in dealing with the Infirmary site, and is of the opinion that immediate steps should be taken to utilise it by erecting thereon a monumental building."

The Council, having been informed that proposals were under consideration for the alteration of the tram lines in Albert Square and St. Peter's Square, and the erection of tram shelters, passed the following resolution, which has been sent to the Manchester Corporation:—

"That the Council, having had before it a plan showing the proposals of the Tramway Committee for the provision of shelters in Albert Square and St. Peter's Square, hereby records its opinion that such proposals are most objectionable, and on both æsthetic and practical grounds ought not to be carried out."

FRAMES AT THE NATIONAL GALLERY.

By R. H. BENSON.

[In another part of this issue we give a brief synopsis of the recent report by a Committee of Trustees of the National Gallery appointed to inquire into the retention of important pictures in this country, and other matters connected with the National Art Collections. Among the appendices is the following "Note on Frames," by Mr. R. H. Benson, one of the trustees.—ED.]

THE question of appropriate frames, contemporary in design, and gilt in the style of the period and school to which a picture belongs, has been gradually forcing its way to the front.

From the beginning of the Gallery, fine original frames have occasionally been acquired with the pictures, and the setting intended by the artist has been preserved. Unfortunately, they have almost all been re-gilt, wholly or partially, in the early Victorian style, upon a white ground instead of red, and sometimes burnished to simulate metal. Although London dirt has toned them down, the glare and solidity still strike a false note and detract from the effect of the whole. Instances of fine frames re-gilt are: No. 2097, Paris Bordone, "Lady with the Carnations"; No. 638, Francia's "Madonna and two Saints"; No. 1323, Portrait by Bronzino of Piero de Medici; No. 2083, the portrait by L. Costa, presented by the Misses Cohen; No. 248, Lippo Lippi's "Vision of St. Bernard"; the "Madonna," by Bernardino Fungai (lent by the Victoria and Albert Museum); No. 1490, a Venetian frame of about 1550, round a Tintorettesque portrait, containing a central motif which descends from Venetian Gothic of the fourteenth century; No. 1489, French (?) frame of 1550-1600, good in tone, fine and appropriate, barring the inner flat, which is added; four Sansovino frames round the P. Veronese allegorical subjects, &c.

The frame round the little Mazzolino (No. 1495) appears to be original and intact, appropriate in design, watergilt, and low enough in tone to set off the picture without jarring or distracting attention. Equally admirable specimens are the original architectural frame of the Filippo Mazzola Madonna and those of the Fiorenzo di Lorenzo Madonna and the portrait of Costanza de Medici, gifts of Mr. Salting, both of which last are a single moulding, and lend themselves to be shown upon old velvet, in cases. The frame round Cima's little "David and Jonathan" (No. 2505) is an unspoilt original, and that round the portrait of Bianchini (No. 2487) is an excellent copy of a late fifteenth-century Ferrarese original. Indeed, several of Mr. Salting's frames afford examples to be followed, for towards the end of his life he acquired fine models from dealers, who realised the added value they gave to what they had to sell. The frame of his Seb. del Piombo "Salome" (No. 2493) is an original of about 1500-25, and embellishes the picture. On the other hand, the copy, stencilled in colour, that frames his Salvator Mundi by Previtali, is not a success; and the new frame of Bellini's Doge Loredano is a failure, having been dirtied with lampblack, or some sootiness, to simulate age, instead of being toned and worn to a luminous red ground.

From 1850 to about 1880 fine original frames could have been obtained at reasonable cost, whereas now one may have to pay up to £100 or even £200. But even in 1850-80 they had to be collected with difficulty, and instead of collecting them, the Gallery fell back on what English framemakers could supply. Among the poor designs used without discrimination are the "Watts" pattern, sundry "ribbon" patterns, and what may be called the "reel" pattern, all of the nineteenth century. The "Watts" frame appears thirteen times in one room on pictures by Reynolds, Gainsborough, Romney, Lawrence, Opie, Hoppner, and Millais. The source of it is Ferrarese, but the Italian craftsman decorated the flat with a pattern, so as to unify the two mouldings, instead of leaving them separated by a blank and dumb space. The chief member of the "reel" pattern appears to be turned on a lathe, and is lifeless, like all machine-made work. You find it solidly and stolidly gilt, confining and constraining two Giorgiones, "The Knight in Armour" and the "Adoration"; Piero della Francesca's portrait (No. 758); the two Michel Angelos (Nos. 790 and 809); the Botticelli "Adoration" (No. 592); Cosimo Tura (No. 773); Gentile Bellini's portrait (No. 1440); the Northbrook Seb. del Piombo (No. 1450); portraits by Lotto, Moroni, Bordone, and Jacopo Bassano; two Morandos, a Rubens, and three Rembrandts, &c. There are no less than four alongside of each other at the end of the Umbrian Room, examples of a bygone fashion of framing pictures uniform, as at Buckingham Palace and the Vienna Gallery.

These patterns are a sort of counsel of despair, lest worse befall, at a period when London framemakers were deficient in designs and the public in appreciation. Worse still are a whole series of "compo" frames. Correggio's "Venus, Mercury, and Cupid" is disfigured by one of them, and his "Ecce Homo." The Cariani (No. 1203) has a carved centre moulding and the rest is made up in composition that cracks.

Then you come across sixteenth and seventeenth century pictures in eighteenth-century frames, fluted, for instance, like Georgian silver. Correggio, Titian, Catena, Jacopo Bassano, Mabuse, Ruysdael, and Velazquez all suffer from this anachronistic entourage. Even Lippo di Dalmasio (fourteenth century) appears in an eighteenth-century frame. Also you will find two Ercole de' Robertis, an Antonello da Messina, and a Pollaiuolo in black Dutch settings, Titian's portrait from Cobham in a French frame of the seventeenth century, Weenix (No. 238) in an Italian model, and Michel Angelo's "Leda" in a modern frame suitable for a print. The Rembrandts are all in gilt frames of a century too late, instead of in their plain native blackwood or rosewood, such as has recently been restored to "The Syndics" at Amsterdam.

Equally discordant is the glaring modern gold that hits you first of all, as you stand in the middle of a room—*e.g.*, the P. della Francesca portrait (No. 758), Botticelli's "Adoration" (No. 623), the Matteo di Giovanni Altarpiece (No. 1155), and Nos. 640, 592, 582, 1217, 1138, 591, and dozens of others.

The architectural frames for large Italian altarpieces, such as the Ercole Grandi, the two last acquired Signorellis, the Cima, the Romanino, the Ansidei Raphael, the Leonardo Virgin of the Rocks, &c., are praiseworthy efforts to reproduce fine contemporary designs. Had the decoration of the pilasters only been carved out of the solid, or modelled in pastiglia by an Italian craftsman, and gilt on red ground so as to give the tone and reflets of original frames, they would have been a great adornment to the gallery. As it is, they are hung, and stand out from the wall, instead of being fixed to it, with a table or brackets to support them.

Towards the end of the last century costly efforts were made after better designs; for instance, for the Pisanello "St. Anthony and St. George," but the tone of the modern gilding swears at the picture. The same design could have been executed in Italy "à l'antica" for £10 instead of £30. The Ercole Roberti "Gathering Manna in the Wilderness" (No. 1217) is another case of money spent on gilding that kills.

Latterly efforts have been made to acquire original frames—*e.g.*, for the "Rokeby" Velazquez which suffered from an eighteenth-century model, and which is now set off by a somewhat rococo and florid, but not inappropriate, Spanish frame, a hundred years later than Velazquez. But

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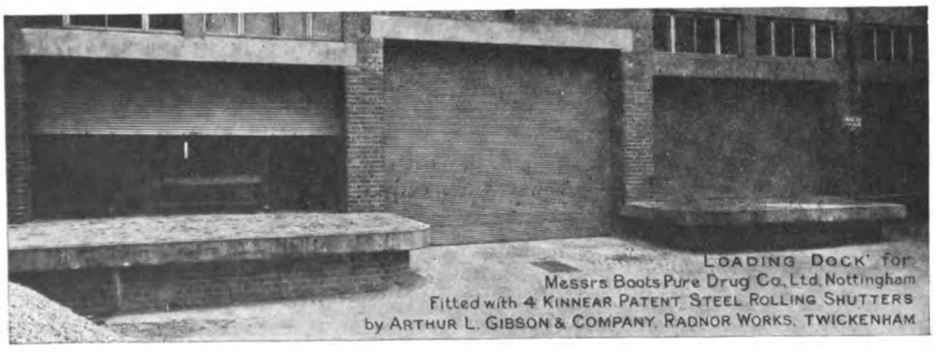
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in the same room there are three Velazquez, one Murillo, one Ribera, and one Zurbaran, all in eighteenth-century frames of the Georgian style. True Velazquez frames may be seen in private collections, and good copies are obtainable.

Some of the English framemakers have at last acquired the art of water-gilding on red ground, and some progress has been made with reframing in dark wood certain of the Dutch pictures in the Peel and Wynn Ellis collections which came to the nation in English frames mostly too late by 100 years or more.

But for the finest water-gilding, such as is to be seen round Mr. Sargent's pictures, you must go to Paris, and for the best blackwood, rosewood, or tortoiseshell Dutch frames to Amsterdam, and for fine carving, and modelling in pastiglia, to Italy. Many examples may be seen in private collections, but hardly yet in the National Gallery. Indeed, some Italian work may almost be described as forgery, so good is the copy. The finest gallery for frames in Europe—artists' and not mere bottega work—is the Pitti. The tone of the silk on the walls there also leaves nothing to be desired.

In order to eliminate some of the more discordant and anachronistic examples in the Gallery it is recommended (1) that the Director be expressly authorised to purchase original frames of the fifteenth, sixteenth, and seventeenth centuries, Italian, French, Dutch, Spanish, and English, wherever he can find them in fair condition and at reasonable prices. Seven such frames at least might have been bought in Venice last Easter at from 150 to 300 francs each, and they could have been cut to fit the size of pictures as required.

(2) That an effort be made to acquire some of the best French craftsmen's work, gilded "à l'ancien." In the Musée Cluny are nine superb examples of the early sixteenth century, and others of the seventeenth and eighteenth in the Musée des Arts Decoratifs. Bourdier, 21 Rue de Courcelles, might be employed to copy them.

(3) That an experiment be made of ordering from Giovacchino Corsi of Siena two or three copies, to begin with, of fine designs illustrated in Guggenheim's "Le Cornici Italiane," published by Hoepli in Milan. Examples of Corsi's work can be seen in London.

ARCHITECTURAL ASSOCIATION OF IRELAND.

THE annual general meeting of the Architectural Association of Ireland was held last week at 15 South Frederick Lane, Dublin. The retiring President, Mr. H. Allberry, in his valedictory address, dealt with the effects of the war upon the progress of the Association. He alluded with pride to the number of members who had joined the Colours, and remarked that, in spite of all difficulties, the Association had enjoyed a successful season and preserved its stability.

In their eighteenth annual report the Committee expressed regret that the progress of the past few years had not been fully maintained. In common with other professional societies, the Architectural Association had found its activities curtailed in various directions by the effects of the war. The total number of members was now 110. In the absence of many of the younger members on active service, the Committee ultimately decided to abandon the class section of the programme. The Committee regretted that several spaces in the museum of building materials were still vacant. The Hon. Librarian reported that the number of books borrowed was 19½ per cent., and new books were greatly in demand. The lending library had been completely revised, and books of an obsolete character, transferred to the reference library, partly replaced by modern books. As a result of frequent interchange of views between the officials of the Irish and English Architectural Associations a mutually satisfactory arrangement was reached, under which members of each receive certain direct advantages from the other society, including a common employment register. The following members had felt it their duty, and had been able, to join the Colours:—Messrs. A. W. Reid, F. Shepherd, C. H. Mitchell, A. Brady, C. D. B. Ward, W. MacLaren, P. L. Dickinson, H. S. F. Clay, D. M. Turner, Cyril Keefe, and J. E. Burke. The latter had been mentioned in despatches.

The prizes were awarded as follows:—Institute prize, and also Downes bronze medal, Louis F. Giron; special prize, Thos. Walsh; President's prize, A. E. Jones; Vice-President's prize, W. A. Dixon.

On the walls of the meeting room were displayed the drawings submitted for the prize competition by students.

The officials elected for the ensuing year are: President, H. G. Leask; Vice-President, Hubert J. Lundy; Hon. Secretaries, L. F. Giron and W. A. Dixon; Hon. Librarian, T. L. Cullimore; Hon. Treasurer, G. F. Beckett; Committee, H. Allberry, J. Geoghegan, F. Hayes, W. A. Scott, T. F. Strahan, A. E. Jones, B. V. Callaghan, and G. G. Lynes.

RESPONSIBILITY FOR FALLING PLASTER.

AN action which occupied the attention of Judge Roberts and a jury at Clerkenwell County Court raised several points of interest. A railway worker named William Henry Fulbrook, of King's Road, Caversham, Reading, sued Mary Anne Ward, of the White Swan Hotel, High Street, Islington, for damages for injuries received through the fall of a patch of ceiling.

Plaintiff said that on the evening of December 27 last he was in the hotel, and, after having a drink, stooped to pick up his bag, when a piece of the ceiling fell, striking him between the shoulders. He was taken on a police ambulance to the hospital, and was subsequently attended by his own doctor at home. He was in bed eight days, and was unable to resume work for five weeks. He still felt the effects of the bruising of his back, and had headaches.

The father-in-law of plaintiff said he also was knocked down by the falling patch of ceiling. He, however, was not much hurt, and was able to continue work.

Medical evidence showed that plaintiff was extensively bruised on the upper part of his back, and was much shaken.

A police-constable stated that he heard a loud report and afterwards saw a cloud of dust come from the hotel doorway. He thought the plaster that had fallen would measure about 10 feet by 8 feet. One or two laths were broken.

Mr. C. G. Miller, architect, of Chancery Lane, said he inspected the ceiling last May, and on the instruction of Messrs. Younger & Co., brewers, prepared a specification for washing off the ceiling, repairing where necessary, and applying two coats of paint. The tender of Messrs. C. Dearing & Co., Ltd., was accepted, and witness inspected the work during progress and after it was done. The plaster was perfectly sound.

Mr. Charles Dearing, of the firm of builders and contractors engaged, stated that he superintended the work, and found no defect whatever in the ceiling. Some of the pieces of paper were loose. If there had been anything wrong witness would have noticed it, and it would have been cut out and the ceiling repaired. "In fact," added Mr. Dearing, "you cannot put new pieces of paper on a defective ceiling." There was a considerable amount of heavy traffic in the street in question, and undoubtedly that would have some effect on the ceiling. In washing off a ceiling, if the plaster was unsound or bulged, the very friction of the brush going over it would bring the patch of ceiling down on the workman.

Defendant stated that the landlords undertook to do all necessary repairs, and last June repairs were carried out.

An architect, giving evidence on behalf of plaintiff, said he had visited the premises that day, and found that a portion of the ceiling had been restored. Even as restored, however, he did not consider it to be a good, sound ceiling. There were still signs of bulging.

Mr. Miller declared that he certainly did not agree that the ceiling was bulging. It was in a sound condition.

His Honour put the following question to the jury: "Ought defendant, as a reasonably careful occupier, to have known that there was danger to people using the public-house in consequence of the condition of the ceiling?"

The jury answered the question in the affirmative, and assessed damages at £15 15*s*.

Counsel for defendant contended on a point of law that an occurrence of this kind did not show any evidence of negligence.

His Honour, after consideration of the point, said there was nothing to show any external cause why the ceiling should have fallen. As to the suggestion that the hotel was situated in a thoroughfare through which much heavy traffic passed, and that there was a great deal of vibration in consequence, he said, of course, that was a matter that had to be considered from the point of view of more frequent

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repair than would be necessary in the case of a country inn. There was no evidence to show that any heavy traffic was passing at the time the ceiling fell, and it fell without any apparent external cause. The point was whether on the facts proved there was a presumption of negligence, and it seemed to his Honour that that presumption did arise. He thought the jury were entitled on the whole of the evidence to come to the conclusion that negligence was proved. He accordingly entered judgment for plaintiff for £15 15*s.* and costs.

Leave to appeal was granted.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Macclesfield.—Council schools, Trinity Square and Daybrook Street, Hurdsfield: proposed alterations (£2,500). Mr. J. Wilding, architect of the Cheshire Diocesan Church Schools' Association.

Sandbach.—P.M. Chapel and school, Malkins Bank. Messrs. Price & Son, architects.

CUMBERLAND.

Carlisle.—Fawcett Council school: proposed alterations.

DERBYSHIRE.

Carr Vale.—P.M. Church. Messrs. Davidson & Son, architects, 6 Grainger Street, Newcastle-on-Tyne.

Derby.—Temperance Hall, Walbrook Road (350 sittings). £1,200.

Dronfield.—Hospital: extensions. Mr. T. S. Wilcockson, architect, Knifesmith Gate, Chesterfield.

DEVON.

Shebbear.—Two cottages, for Torrington R.D.C. (£650).

DURHAM.

Blackhall Colliery.—Fifteen cottages, for Mr. T. Lawson.

ESSEX.

Chelmsford.—Offices, Duke Street and Market Road, for the Prudential Assurance Company.

East Ham.—Proposed Council school, Dersingham Avenue (for 600 places).

Ilford.—Carnegie Public Library.

GLOUCESTERSHIRE.

Cheltenham.—Proposed public elementary schools, Charlton Kings.

HAMPSHIRE.

Bournemouth.—Proposed municipal Secondary school for girls.

HEREFORDSHIRE.

Hereford.—Y.M.C.A. premises, St. Owen Street: additions. Messrs. Groome (A.R.I.B.A.) & Bettington, architects, Palace Chambers, King Street.

KENT.

Maidstone.—Two cottages, for Mr. N. Smith.

LANCASHIRE.

Barrow-in-Furness.—Proposed Secondary school.

Elswick.—Sanatorium: additions and alterations (£1,000).

Manchester.—Proposed high school, Church Lane, Moston.

Turton.—Mart for the Turton Auction Mart Co., Ltd. Mr. J. E. Clayton (of Entwistle), architect.

Walkden.—Garage, Sandwich Street. Mr. J. Hayes, architect, 32 Manchester Road.

Wigan.—Proposed mission hall, Holt Street, Ince, for the Parish Church.

MONMOUTHSHIRE.

Blackwood.—Premises, Oakdale, for the Tredegar Co-operative and Industrial Society, Ltd.

NORTHUMBERLAND.

Scotswood.—St. Margaret's Church (£7,200).

SHROPSHIRE.

Shrewsbury.—Sixty-three garden suburb houses, Ditherington. Mr. A. E. Williams, architect, 12 High Street.

STAFFORDSHIRE.

Bloxwich.—Nos. 74-80 Church Street: additions and alterations, for Mr. J. Vale.

Shop premises, Bell Lane: additions, for Mr. H. Squires.

SUSSEX.

Broadbridge Heath.—Council school: proposed additions and alterations. Mr. H. P. Roberts, F.R.I.B.A., County Education architect, Thurloe House, Worthing.

WARWICKSHIRE.

Birmingham.—Proposed post office, near Hall Street.

Coventry.—Proposed All Saints' Mission church, vicarage and schools.

Proposed Congregational Chapel, Stoke.

Cooling towers, off Aldbourne Road, for the Corporation Electricity Committee.

Factory, Carlton Road: addition, for Mr. W. Laird.

House, Beechwood Avenue, for Messrs. Aston & Greenhill.

Two houses, Broadway, for Messrs. S. E. Cox & Co.

Three houses, Clay Lane, for Mr. H. J. Emery.

Two houses, St. Andrew's Road, for Mr. C. F. Woodall.

Three houses and house with shop, Lowther Street and Heath Road, for Mr. A. Jeffs.

House, Shakespear Street, Upper Stoke, for Mr. C. Davenport.

Mission Rooms, Camden and Stratford Streets.

Offices, &c., Gosford Street, for Messrs. Hotchkiss et Cie.

Sanitary block, Queen's Road, for A. Herbert, Ltd.

School, Folly Lane, for 1,200 places. Mr. T. R. J. Meakin, architect, 11 Warwick Row.

Engine- testing shop, Daimler Road, for the Daimler Co., Ltd.

Engine-testing shops, Park Side, for the Siddeley Deasy Motor Co., Ltd.

Workshop, Foleshill Road: additions, for Mr. G. Wilson.

Foleshill.—Works, Lockhurst Lane: extension, for Messrs. White & Poppe, Ltd.

Nuneaton.—House, Arbury, for Mr. F. A. N. Newdegate.

House, Manor Court Road. Mr. G. Cooper, builder, Midland Road.

Four houses, Marlborough Road. Mr. W. A. Taberer, builder, Queen's Road.

No. 74 Abbey Street: additions and alterations, for Mr. Woodcock.

Dyeing works, Newdegate Arms Estate, for Messrs. Oram Bros. (of Leicester).

YORKSHIRE.

Ambler Thorn.—Liberal club premises. Mr. H. F. Sharp, architect, Cambridge Buildings, Queensbury.

Batley.—Villas, White Lee Road. Mr. J. H. Brearley, architect, Commercial Street.

Brighouse.—St. Paul's Wesleyan Sunday school (£4,000).

Carcroft.—Church and schools. Mr. O. M. Thorp, architect, 133 College Street, Long Eaton. Messrs. C. Sprakes & Sons, contractors, East Laith Gate, Doncaster (£2,300).

Churwell.—Twelve houses, Granny Avenue. Mr. T. A. Buttery, architect, 1 Basinghall Square, Leeds (and at Morley).

Dinnington.—R.C. Church, Worksop Road.

Hebden Bridge.—Proposed Baptist school, Birchcliffe.

Hull.—Tuberculosis hospital.

Ingleton.—Council school for 300 places.

Ryhill.—Cinema theatre, for Mr. Barraclough.

SCOTLAND.

Campbeltown.—Cottage hospital: enlargement. Mr. H. E. Clifford, F.R.I.B.A., architect, 225 St. Vincent Street, Glasgow.

Dundee.—Cottages, off Clepington Road, for Mr. C. Gray.

Garage, Tay Street Lane, for Dr. A. MacGillivray.

Glasgow.—Church hall, &c., Dixon Road, Govanhill, for Bridgegate U.F. Church.

Factory, Westmuir Street, Parkhead, for Mr. D. Willox.

Premises, Broad Street, for Messrs. Ewing & Co. and Mr. A. Macdonald.

Clutha Works, Govan: extension, for Messrs. P. & W. McLellan.

St. Rollox (West) Depot, Pinkston Road: addition, for the Caledonian Railway Co.

IRELAND.

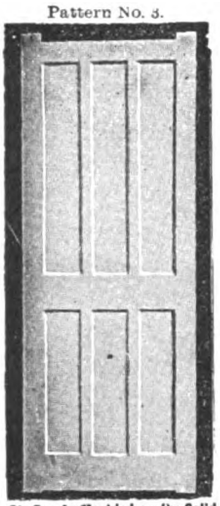
Enniskillen.—Tuberculosis sanatorium. Professor Scott (of Dublin), architect.

Mullingar.—Technical school.

Wexford.—Tuberculosis sanatorium, Windmills Hill.

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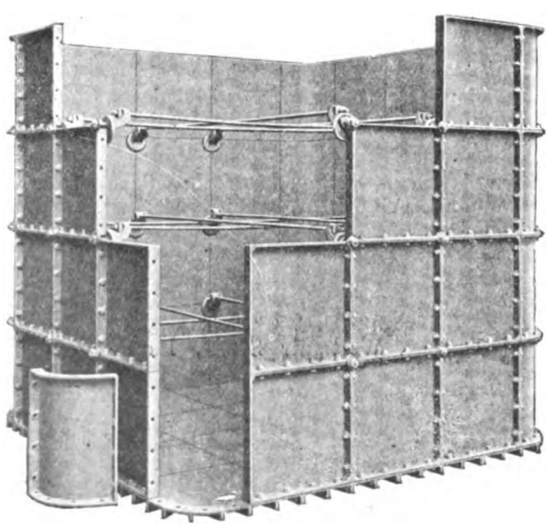
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THE
Architect and Contract Reporter.
FRIDAY, MAY 7, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—The Louth County Council invite architects to submit designs in competition for new county offices, to be erected in Dundalk, and have appointed Professor William A. Scott, A.R.I.B.A., F.R.I.A.I., A.R.H.A., to act as their assessor. Conditions of competition may be obtained from the county secretary on receipt of a deposit of two guineas, which will be returned on receipt of a *bona-fide* design, or the return of the conditions within seven days. Mr. Charles McAlester, county secretary, Courthouse, Dundalk.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

BATLEY.—For various trades required in the erection of semi-detached villas, White Lee Road. Mr. J. H. Brearley, architect, Commercial Street, Batley.

BIRMINGHAM.—May 18.—For the superstructure (steel stanchions, roof trusses, and roof covering) in connection with a new shed at the Telegraph Stores, Birmingham, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Assistant Architect, H.M. Office of Works, 42 Paradise Street, Birmingham, and H.M. Office of Works, &c., Storey's Gate, S.W.

CAMERTON.—May 18.—For erection of a stable and coach-house adjoining the Camerton Small-pox Hospital, for the Derwent Joint Small-pox Hospital Board. Mr. H. B. Williams, architect to the Board, Town Hall, Workington.

CHESTERFIELD.—May 11.—For erection of a ward to accommodate twenty beds at the Penmore Hospital. Mr. J. Middleton, law clerk, 24 Gluman Gate, Chesterfield.

EBBW VALE (MON.).—May 12.—For erection of forty cottages on the Beaufort Estate, for the Fitzroy Avenue Building Club, and for the construction of roads and sewers. Deposit £2 2*s.* Messrs. Vaughan-Richards & Williams, architects and surveyors, Imperial Chambers, Ebbw Vale.

EBCHESTER.—May 15.—For erection of farmhouse near Ebchester, for the Benfieldside Urban District Council. Mr. J. J. Eltringham, Licentiate R.I.B.A., architect and surveyor, Blackhill, Durham.

EXETER.—May 13.—For (*a*) repairs and alterations to the following county bridges, for the Devon County Council—viz.: (1) Pocombe Bridge, near Exeter; (2) Yarty Bridge, near Axminster; (3) Axe Bridge, Hawkchurch, near Axminster, and (*b*) repainting the following county bridges: (1) Honiton Town, Honiton; (2) Broom Bridge, Chardstock; (3) First Bridge, Cullompton. Mr. W. P. Robinson, A.M.I.C.E., county surveyor, 22 Queen Street, Exeter.

FAREHAM.—May 12.—For alterations and additions to the school buildings, for the Governors of Price's School. Deposit £2 2*s.* Mr. W. Cobbett, architect, West Street, Fareham, Hants.

HALIFAX.—May 10.—For maple flooring at Parkinson Lane School, for the Education Committee. Deposit £1. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HARROGATE.—May 17.—For the work of pointing to the walls of the various buildings and boundary walls at the Isolation Hospital, Thistle Hill, for the Harrogate and Knaresborough Joint Isolation Hospital Committee. Mr. C. E. Rivers, A.M.I.C.E., borough surveyor, Municipal Offices, Harrogate.

HUDDERSFIELD.—May 10.—For any of the various works required in erection of dwelling-house, Grange Moor. Send name and address by May 10 to Messrs. James H. Hall & Son, architects, Exchange, Huddersfield.

IRELAND.—May 10.—For alterations to the existing Lifeboat House and Slipway at Kingstown Harbour, Co. Dublin, for the Royal National Lifeboat Institution. Deposit £1. Messrs. Douglass, Lewis & Douglass, engineers and architects, 15 Victoria Street, Westminster, London, S.W.

IRELAND.—May 12.—For building four single labourers' cottages and one labourer's double cottage and for fencing the plots attached to each, for the Claremorris Rural District Council. The Clerk of the Rural District Council, Claremorris.

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LONDON.—For designs and rebuilding the flank wall and reconstruction of the interior of the corner premises, 28 Red Lion Street, Holborn, W.C., meaning the division of the shop and adaptation of the upper floors to tenements. Apply to Messrs. Sinden & Co., solicitors, 221 Sydenham Road, Sydenham, S.E.

LONDON.—May 13.—For taking down cornice and other work at their Newington Institution, Westmoreland Road, S.E., for the Guardians of the Poor of the Southwark Union. Deposit £2. Mr. A. Saxon Snell, F.R.I.B.A., architect, 9 Bentinck Street, Manchester Square, W.

MORLEY.—May 10.—For the plumbers' work, painters' work, and electrical fittings required for the Dental Clinic, Commercial Street, for the Morley Education Committee. The Borough Engineer, Morley.

NEWCASTLE-UPON-TYNE.—For cement work, &c., in connection with alterations at the East Heddon Estate, for the Northumberland County Council. The County Land Agent, The Moothall, Newcastle-upon-Tyne.

NORWICH.—May 10.—For pulling down 13 to 19 Robinson's Yard, Oak Street, and other work in connection therewith. Mr. A. E. Collins, M.I.C.E., city engineer, Guildhall, Norwich.

OLDHAM.—May 17.—For tiling at the new council infants' school, Higginshaw, for the Oldham Education Committee. Messrs. Winder & Taylor, architects, Union Street, Oldham.

OLDHAM.—May 17.—For iron gates and railings and cloak-room fittings at the new council infants' school, Higginshaw, for the Oldham Education Committee. Messrs. Winder & Taylor, architects, Union Street, Oldham.

ST. DENNIS (CORNWALL).—May 10.—For alterations to school buildings and offices, &c., at the St. Dennis Church of England School. Mr. B. C. Andrew, M.S.A., architect, Biddick's Court, St. Austell.

SCOTLAND.—May 10.—For the mason, carpenter, slater, plumber, plaster, painter, and glazier works of house to be erected at Shore Street, Portgordon. Mr. P. Reid, 3 Cathcart Street, Portgordon, Banffshire.

SCOTLAND.—May 11.—For repairs and alterations at Portree United Free Church. Mr. J. Wittet, architect, Elgin.

SCOTLAND.—May 12.—For joiner, plumber, and glazier work in connection with alterations to roof of verandahs of admission wards Nos. 1 and 2, for the Edinburgh District Board of Control. The office of the Medical Superintendent, Bangour Village.

SCOTLAND.—May 13.—For the following works required in connection with erection of sanatorium and children's home at Southfield, near Mearns—viz.: (1) mason, brick, and concrete works; (2) steelwork; (3) slater and rough cast works; (4) plumber work; (5) plaster work; (6) asphalt work; and (7) tile work—for the Glasgow Corporation. The Office of Public Works, Cochrane Street, Glasgow.

STAINLAND.—May 14.—For the various works required in alterations and additions to the Old Red Lion Inn, Sowood, Stainland, Yorks. Messrs. J. B. Abbey & Son, architects, &c., District Bank Chambers, Market Street, Huddersfield.

SWALWELL.—May 13.—For erection of a lodge, chapel, boundary wall, &c., at the Cemetery, Garden House, Swalwell, for the Whickham Urban District Council. Deposit £1 1s. Mr. J. B. Renton, surveyor, Council Offices, Whickham.

TIDESWELL.—May 14.—For proposed extension of Church of England schools. The Rev. T. Rogerson, vicar, Tideswell, Derbyshire.

TONBRIDGE.—May 10.—For erection of a fence at the County School for Girls, Tonbridge, for the Kent Education Committee. Mr. T. Newsone, local secretary, Technical Institute, Tonbridge; at the offices of the Committee, Sessions House, Maidstone, Kent.

TRE-THOMAS.—May 12.—For erection and completion of a vestry at Newport Road, Tre-Thomas, near Bedwas, Mon., for the Trustees of the Congregational Church. Mr. J. T. Jenkins, M.S.A., architect and surveyor, Porth, Glam., also at Glyn Stores, Newport Road, Tre-Thomas.

WALES.—For erection of office buildings on site of 97 and 98 Bute Street, Cardiff, which will include an extension to the adjoining branch of the London City and Midland Bank. Deposit £2 2s. Mr. H. Budgen, F.R.I.B.A., architect, 95 St. Mary Street, Cardiff.

WALES.—For erection of business premises in John Street, Merthyr Tydfil, for Mr. J. W. Morris. Mr. O. P. Bevan, P.A.S.I., architect, Express Chambers, Merthyr Tydfil.

WALES.—For renovation to and the reinstatement of Nos. 4 and 5 Church Row, Dowlais, for the Rev. Henry Evans. Messrs. Johnson & Richards, architects, Merthyr Tydfil.

WARRINGTON.—May 10.—For erection of a caretaker's cottage near Sankey Canal Bridge, Warrington, for the Lancs. County Council. Deposit £1 1s. The County Bridgemaster's Office, County Offices, Preston.

WETHERAL.—For construction in concrete of a water tank at Wetheral Shields, for the Carlisle Rural District Council. Mr. F. Barker, surveyor, the Council Offices, 7 Victoria Place, Carlisle.

WEYMOUTH.—May 12.—For supply of materials and the erection of buildings for the working classes to the number of 100, more or less, self-contained houses, and 16 tenement buildings, more or less, at Pye Hill and Granville Road respectively, within the borough; also the construction of streets in connection therewith, for the Corporation. Send applications and £2 2s. deposit by May 12 to Mr. W. R. Wallis, town clerk, Municipal Offices, Weymouth.

WILSFORD.—For erection of farm buildings, house, and water supply to Glebe Farm. Mr. J. A. Metham, M.S.A., architect, Grantham.

WITHERNSEA.—May 18.—For erection of a reinforced concrete wall at the South Cliff, the total length being about 450 yards, for the Withernsea Urban District Council. Deposit £2 2s. Mr. J. H. B. Kirton, engineer to the Council, Council Offices, Withernsea.

TENDERS.

CARSHALTON.

For the construction of conveniences, together with the necessary internal fittings, at Carshalton Park, for the Urban District Council. Mr. W. W. GALE, A.M.I.C.E., surveyor, Carshalton.

Truett & Steele	£423 16 10
Burnand	407 0 0
Shopland & Co.	400 0 0
Owen & Co.	324 15 0
Priest Bros.	313 19 9
Potter	310 10 0
King	310 9 5
WM. BAKER, 49 Thorp Road, Wallington (*accepted*)	253 11 1

CHELMSFORD.

For the erection of an engine house and incidental works at their Admiral's Park Waterworks, for the Town Council. Mr. P. T. HARRISON, A.M.I.C.E., borough engineer, Chelmsford.

Moss	£1,583 17 4
French	1,350 15 0
Rayner	1,267 16 9
Potter	1,249 0 0
Bailey	1,244 0 0
J. SMITH & SON, Witham (*accepted*)	1,236 0 0

ERITH.

For erection of a new ward and extensions to the administration block at the Erith Sanatorium, Little Heath, Belvedere, for the Erith Urban District Council. Mr. H. HIND, surveyor, Erith. Quantities by Mr. HIND.

Varrall	£3,566 0 0
Higgs	3,329 0 0
Kent	3,267 0 0
Hollingsworth	3,256 0 0
Pickrill	3,200 0 0
Butler	3,195 0 0
Lown & Co.	3,175 0 0
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F. & G. Foster	2,997 0 0
Chandler	2,988 10 0
Marrable	2,849 0 0

HOLMFIRTH.

For the building of the electricity works upon the market ground, for the Urban District Council. Mr. A. B MOUNTAIN, architect, Holmfirth. Quantities by Mr. A. B. Mountain.

R. Turner, Holmfirth	£1,217 10 0

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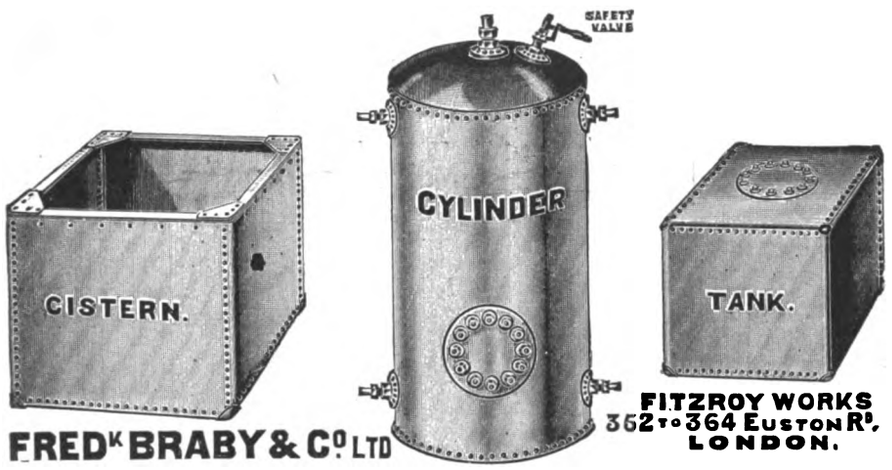
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GOLCAR.

For the various trades required in the erection of a house and shop in Seymour Road. Mr. A. SHAW, architect, Golcar.

Accepted tenders.

George Milnes & Sons, Seymour Road, Golcar, masons, &c.
William Lockwood & Son, Town End, Golcar, joiners, &c.
Murrant & Smith, Town End, Golcar, plumbers and electricians.
J. E. Dyson, 116 New Hey Road, Lindley, Huddersfield, concreters.
George Henry Day & Sons, Station Road, Milnsbridge, Huddersfield, plasterers, painters, and slaters.

LONDON.

For the enlargement of the Isle of Dogs Pumping Station, for the London County Council.

Roberts & Co.	£20,699	14	2
Moss	19,232	5	5

Execution of work deferred.

For alterations to the lodge at Abbey Mills Pumping Station, for the London County Council.

Harris	£406	0	0
F. & T. Thorne	347	0	0
Griggs & Son	276	0	0
Newman & Co.	218	0	0

PATCHWAY.

For work at the Baptist Chapel. Messrs. LA TROBE & WESTON, architects, Bristol.

Humphreys	£770	0	0
Willmott	768	12	0
Longden	763	0	0
Bray & Slaughter	737	0	0
Foster	730	0	0
Lovell & Sons	697	10	0
C. W. Kirby	687	16	0
Clark & Sons	678	0	0
WALTERS & SON (*accepted*)	643	0	0

STEVENAGE.

For the erection of eight cottages at Stevenage, for the Stevenage Urban District Council.

Ekins & Co.	£2.758	0	0
Willmott & Sons	2,396	0	0
Shrouder & Matthews	2,185	0	0
Allen	2,175	0	0
Payne Bros.	2,040	0	0
Austin & Son	2,031	0	0
Redhouse & Son	1,994	0	0
Ray	1,956	0	0
Bailey & Co.	1,890	0	0
Naden	1,890	0	0
Foster & Co.	1,850	0	0
Dymoke	1,576	5	0

THE STABILITY OF QUAY WALLS ON EARTH FOUNDATIONS.*

IN spite of the large amount of experience which has been gained in the construction of quay walls, it is still one of the most difficult problems in engineering to design a wall on an earth foundation with confidence that it will be stable when completed. A warehouse or a bridge can now be designed not only with the assurance that it will bear its load, but also with a knowledge of its factor of safety sufficiently accurate to satisfy the designer that material has not been wasted. But the same can certainly not be said of a retaining wall on a soft bottom—at all events not of a wall, say, 40 to 80 feet high, such as is commonly needed to sustain the quays of a modern dock. Even if the designer of such a wall is assured that it will stand, he cannot with any confidence tell you what factor of safety it possesses. The cause of his uncertainty is of course the difficulty of ascertaining the actual lateral pressure imposed by an earth backing and the actual resistance offered by an earth foundation. His difficulties are thus different from those of the engineer who has to design large masonry dams. The latter structures are invariably placed on a foundation of solid rock, and the designers' chief care is that the stresses in the masonry of which the dam is composed shall not exceed a safe limit. The dock engineer, on the other hand, has to be anxious that his wall shall not move as a whole on the comparatively soft material on which such structures have in general to be placed. The object of this paper was to consider the uncertainties and difficulties which the designer of a quay wall has to face, and, if possible, to ascertain how far calculations can assist him, and how far he must trust to judgment based on experience. It was also intended to urge upon the Concrete Institute the importance of collecting information upon this subject in the hope that by degrees these difficulties and uncertainties may be cleared away.

A retaining wall may fail as a whole in two ways—
(1) By sliding forward on its base; and
(2) By overturning.

It may be said at once that as regards quay walls, at least, the former mode of failure (by sliding forward) is by far the more common.

The conditions of stability in a "gravity" wall may be summarised thus:—

The forces tending to thrust the wall outwards (generally the lateral pressure of the earth backing) must be at least equalled by the forces tending to restrain it or thrust it inwards. The latter forces are generally the pressure of the water under it and in front of it, the resistance of the earth in front of its toe, and the horizontal resistance to shear (or the friction) at the base of the wall. If these horizontal forces balance, the wall cannot slide forward.

The resultant of the outward forces, however, is almost always at a higher level than the resultant of the inward forces. Thus a couple is formed tending to overturn the wall about its toe. This couple induces a counter-couple, tending to keep it upright. The forces forming this counter-couple consist, on the one hand, of the weight of the wall acting vertically downwards, together with the weight of any earth or water which may lie above the base of the wall, and on the other hand the upward resistance of the earth under that base.

If the upward resistance of the earth beneath the wall is capable of forming with the downward weights a couple at least equal to the overturning couple, the wall cannot overturn.

In order that the earth beneath the wall shall be capable of forming this righting couple, two things are necessary. It is obvious that the centre of the earth's resistance must be forward of the centre of gravity of the wall and of other loads on the base, and generally it is forward also of the mid-point of the base of the wall. Consequently the intensity of upward resistance is generally greatest at the toe and least at the heel. To preserve stability the resistance at the toe must not be greater than the maximum which the earth is capable of offering, and that at the heel must not be less than the pressure induced by the tendency of the earth to rise at this point.

Calculations for the stability of quay walls cannot in our present state be always relied upon, and failures on the one hand and waste of material on the other are liable to occur even to the most careful and experienced designer. This, however, is not saying that such calculations should be entirely ignored. On the contrary, they are most useful in suggesting means for increasing in the most economical manner the stability of designs which are known or suspected to be weak.

The author then dealt with some devices which have been used for increasing the stability of quay walls—namely: (1) Admission of water into dock; (2) sinking foundations deeper; (3) building buttress walls in front on main wall; (4) making wall wider; (5) removing a portion of the backing; (6) improving backing; (7) sloping base of wall; (8) driving piles under base; (9) anchor tiles; (10) lengthening toe.

In conclusion it may be said that owing to the difficulty and expense of making experiments on large walls, it is the more important that careful records should be kept and published of both successes and failures in this class of structure. Such records should include not only dimensions of the wall, and careful notes as to the nature of the materials employed, but also the calculations for stability, with the formulæ used, the assumptions made for the values of constants in those formulæ, and the reasons for such assumptions.

It is of course unlikely that it will ever be possible to design large quay walls purely from rules and without some measure of judgment, but if a body of information, as suggested above, could be collected and analysed, it would help to clear away some of the uncertainties which now beset that interesting though troublesome problem—viz. the most economical design of high quay walls on earth foundations.

* **Abstract of a Paper by Mr. F. E. Wentworth-Sheilds, M.Inst.C.E., read before the Concrete Institute.**

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THE BRITISH FIRE PREVENTION COMMITTEE AND THE WAR EMERGENCY.

THE following are some particulars as to the war emergency work done by the British Fire Prevention Committee during the first nine months of the war:—

Fire Surveys.—The Committee's Special Fire Survey Force of hon. surveyors have surveyed in detail some five hundred establishments taken over for war emergency work. The character and extent of these establishments varied, but often included extensive groups of buildings.

In each case the hon. surveyors' reports, which are prepared on special lines and accompanied by sketch plans, serve as a basis for the detailed written reports to the authorities concerned prepared at the Committee's London headquarters.

War Inquiry Office.—The Committee's War Inquiry Office has dealt with innumerable technical inquiries. This work sometimes included matters of a highly technical character for the authorities, and at other times the ordinary inquiries of members of the public.

"*Fire Warnings.*"—The Committee's Warning Service embraces the preparation and issue of a large number of public "Fire Warnings" disseminated by the Committee in the form of posters, or as notices reproduced by technical societies, &c.

As far as the Committee's "Warnings" are concerned, the following may be of interest: Over 25,000 posters were issued to auxiliary hospitals at home, in France, in the Mediterranean, and in Egypt, as also translations in French, Flemish, Urdu, and Panjabi.

Refugees' homes and hostels distributed over some 400 localities received about 22,000 "Warnings" in English, French, and Flemish.

The issue of farmers' "Warnings" in connection with the epidemic of farm fires last autumn totalled above 30,000.

The number of "Warnings" issued for premises occupied by troops exceeded 25,000.

"Warnings" were issued to factories and workshops engaged on Government supplies and in respect to air raids.

The issue of posters involved not only a careful distribution with directions, &c., but also resulted as a rule in a very extensive correspondence on technical points. The authorities, public corporations, &c., receive the posters free upon written application to the Registrar of the British Fire Prevention Committee at 8 Waterloo Place, London, S.W.

Fire Service Force.—The Committee's Special Fire Service Force, organised by the Committee and comprising ex-fire brigade officers and firemen, was brought into such a form as to make 200 firemen with the necessary appliances readily available for mobilisation in sections within forty-eight hours. Calls upon this Force have so far only been made to a moderate extent for fire patrols.

Generally.—The whole of the complex work arising out of the above has been carried out by the hon. officers of the Committee and a small clerical staff without materially interfering with the routine work of the organisation.

In the conduct of this war emergency work the Committee met with considerable encouragement from the authorities, the various offices and corporations concerned having frequently expressed their appreciation of the services rendered.

NEW CATALOGUES.

CHUBB & SON'S Lock and Safe Co., Ltd., aroused no little interest at the last Building Exhibition in Olympia by a range of reinforced concrete fire-resisting "cupboards," which showed their very latest patent for this kind of work. If we remember aright, the massive and tall exhibit found a purchaser on the opening day. The system has since been christened "Stelocrete," and has been already employed for numerous important contracts. As its name suggests, the principle consists of a combination of steel and concrete, and it is done in a quite simple manner. There is a minimum of steel, which conducts heat, and a maximum of non-conducting concrete filling. In section a "Stelocrete" door consists of a solid slab of light reinforced concrete used as a filling between two steel plates, thus giving fire-resistance, strength and protection to a very high degree. The steel casing is anchored at every indentation to the rods reinforcing the concrete, and its apertures allow the escape of gases or steam generated by fire and water. Although the complete door has a uniform thickness of two inches it weighs no more than the old-fashioned half-inch iron-plate door. The British Fire Prevention Committee has subjected one of these doors to their severest fire test and certified that the door affords "Full Protection (Class B)," which is the highest classification. The test was a four hours' firing in a brick furnace, in one wall of which the door was fixed. The temperature reached 2,040° F., and the face against the fire became white hot. Yet the outside temperature, 14 inches away, never exceeded 125° F., and a piece of newspaper only 12 inches from the door was not scorched. At the end of the four hours' firing a stream of water, at a pressure of 90 lbs. per square inch, was directed for five minutes point blank against the face of the door which had been in the fire. Neither fire nor water passed through. "Stelocrete" has also been tested and approved by the Fire Offices Committee and the London County Council. Strong-rooms, partitions, safes, &c., are made of it either independently or as linings or casings for existing structures. "Stelocrete" doors have been supplied throughout the new warehouse of Messrs. W. H. Smith & Sons, Ltd., Kingsway, W.C., to the London and North-Western Railway at Euston, to Lord Leconfield, to the County Museum at Truro, and to various banks and architects.

IN these days when so much is heard about the necessity for improving the environment of the worker, both during and after his hours of labour, the pamphlet of the Sturtevant Engineering Co., Ltd., 147 Queen Victoria Street, E.C., which is marked as "Treatise No. 1121," may be regarded as *à propos*. It describes in a markedly lucid manner the Sturtevant system of warming and ventilating workshops. This system was introduced into this country about thirty years ago; but we presume its early adoption was not at any works, for employers had scarcely then been enlightened as to the excellent material returns obtained from any consideration to their workers. However, this is not the place to labour the point. It is obvious from this catalogue that the up-to-date machine shop includes provision for warming and ventilating the air. By the well-tried Sturtevant system air either heated or non-heated is forced by a fan through suitable ducts to outlets at any desired part of the building. The ducts can be placed overhead or underground as most convenient, and may be of a variety of materials. Indeed its adaptability is one of the most striking features of the system. The catalogue under notice gives a very excellent idea of how it has been installed in many different kinds of workshop, and is altogether a good instance of what a trade pamphlet should be. Anything in the way of a price-list would be useless, for every job has to be very strictly considered by itself.

THE 1915 catalogue issued by Messrs. S. W. Francis & Co., Ltd., 64-70 Gray's Inn Road, W.C., is indicative of the diversity of this firm's capacity. Pride of place is naturally given to the numerous forms of rolling shutters in steel or wood for which the company are so widely known; a number of photographs illustrate orders executed. It is not a far cry to shop fronts, for are they not often protected by rolling shutters? Here again the list shows that Messrs. Francis are as fully prepared to cater for Jamaica as they are for Whitechapel or Edinburgh. Besides making collapsible gates and grilles they sell wrought iron doors for fire-resistance, and are prepared to make them to work on every kind of principle to meet architects' designs. A strong section of the catalogue is that giving sections of sash bars and stall plates, full-size and half full-size respectively. We must not omit to mention the projecting swing signs, the glass facias, the letters, and (last but by no means least) the collection of some of the addresses where work has been carried out.

THE quarterly meeting of the South Wales Building Trades Employers' Federation was held at Neath on the 29th ult. Mr. H. Waring presided. The Secretary reported the progress of negotiations with the Glamorgan County Council for the settlement of the form of contract, and a sub-committee was instructed to press for further amendments. The form of contract now in use by local authorities was receiving the consideration of the Administrative Committee with a view of securing more favourable conditions and fair treatment for the builders. A grant of ten guineas was made towards the Belgian Builders' Relief Fund. Delegates reported on fresh demands made by operatives for increased wages and alterations of working rules, some of which had been settled by the Conciliation Boards, while others are still outstanding.

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PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 2,009. July 27, 1914.—John Wilson, Upper Brook Street, Manchester. Heating of public buildings and other structures by means of heated air or other heated fluids.

7,157. March 21, 1914.—R. and C. C. Waddington, 90 Walkley Bank Road, and A. E. Hancock, 80 Vincent Road, Sheffield. Casement windows, doors, lights, and the like.

7,985. March 30, 1914.—Chas. Weber, 4 Quai du Midi, Montreaux, Switzerland. Ventilating closet pans.

8,535. April 4, 1914.—W. J. Glover, Beechwood, Warwick. Sprinklers for watering, spraying, or washing roads or other surfaces.

8,845. April 8, 1914.—D. W. C. Mackinnon, 16 Belmont Row, Birmingham. Knob furniture for doors and the like.

W. J. Mills, Church Road, Whitchurch, Somerset. Casting concrete walls and the like *in situ*.

11,290. May 7, 1914.—Arthur Kammermann, 36-37 Kensington Gardens Square, W. Float valve.

11,854. May 13, 1914.—A. H. Miller, 13 Lindisfarne Terrace, North Shields. Sliding bolts for doors and the like.

12,127. May 16, 1914.—F. H. Cole, 89 North View Road, Hornsey, N. Baths, lavatory basins, sinks, and like fittings.

21,263. Oct. 20, 1914.—Dated under International Convention Oct. 27, 1913. P. A. Fisker, 30 Peter Bangsvej, Frederiksberg, Copenhagen. Machine for cleaning, grinding, finishing, and polishing of parqueted floors and similar surfaces.

23,768. Dec. 9, 1914.—J. E. Barraclough, 102 King Street, Dukinfield, Cheshire. Saddle or protection plates of domestic or like ovens.

23,963. Dec. 12, 1914.—Fletcher, Russell & Co., Ltd., and Walter Banks, Palatine Works, Warrington. Auxiliary burners for gas fires.

Any of the above specifications may be obtained from J. D. Roots & Co.

LONDON MASTER BUILDERS' ASSOCIATION.

A CONFERENCE consisting of representatives of various Trade Societies connected with the building industry took place recently with the members of the Council of the London Master Builders' Association, in which a request for an advance of 2*d*. per hour for all trades to compensate for the serious reduction in real wages consequent upon the greatly increased cost of commodities since the war was put forward, and after discussion the L.M.B.A. Council arrived at the following resolution:—

"That this Council is unable to advise the members of the Association to agree to any further increase in the rate of wages, but is quite willing to recommend the extending of the ordinary working hours, such extension not to exceed two hours per day first five days of the week until September 30 next."

Under this proposal the employer would only benefit to the extent of being able to make a little more progress. It would not bring him any profit (if he paid any overtime rates it would only increase his loss).

The workmen would draw increased wages each week which would to a great extent meet the extra cost of food, &c.

Consequently the only contribution of the workman towards the national crisis would be that he should work from five to ten hours extra per week at full pay.

This does not appear to demand any great sacrifice, and would to a great extent solve the problem of the increased cost of living.

This offer was refused.

THE military authorities are understood to be considering the question of replacing soldiers' wooden huts, which have been destroyed by fire, by all-steel portable buildings. A specimen section has been erected, and this is to be inspected by representatives of the War Office. The section, measuring 20 ft. by 24 ft., contains eight windows, and sixteen men can be accommodated in it, while if used for sleeping purposes only twice that number can be put into it. The section is capable of extension almost indefinitely, and can be easily put up or taken down, removed to another place, and re-erected. The cost of the section is about £150.

VARIETIES.

THE Southampton Town Council have agreed to apply to the Local Government Board to borrow £14,000 for the purpose of erecting a water tower on the common for the purpose of increasing the pressure in the Highfield district. A design has been prepared by the waterworks engineer.

WE regret to announce the death of Mr. W. T. Grewcock, A.R.I.B.A., of Leicester, in his forty-eighth year. The deceased gentleman had acted as both secretary and treasurer of the Leicester and Leicestershire Society of Architects, and was also a member of the Leicestershire Architectural and Archæological Society.

AT Tuesday's meeting of the Atherstone District Council the Surveyor submitted plans and estimates for the erection of sixty-one working-class dwellings on land acquired on the Coleshill Road. It was decided to submit the whole scheme to the Local Government Board for their approval, and permission was given by the Council, in the first instance, for the building of twelve houses.

AT the last meeting of the Riccall Rural District Council plans were passed of sixty-eight houses for the Selby Transport and Warehousing Co., Ltd. This makes a total of over 200 houses that the company have either built or are at present erecting in the new industrial district of Barlby adjacent to Selby. The company purchased two years ago 200 acres of land on Barlby Bank with the view to important developments. It is understood that a new railway siding has been planned.

THE Cumberland Education Committee have instructed their architect to prepare preliminary sketch plans and estimate of the cost of girls' school to accommodate 350 scholars, with special room for instruction in housewifery, to be erected adjacent to Egremont Central Infants' School; and also to submit plans of alterations of Bookwell Schools for use as a boys' department only. The cost is expected to be £6,000.

AT the quarterly meeting of the Carnarvonshire County Council it was stated that in reply to a resolution by the County Council, H.M. Office of Works wrote that they were well aware of the merits of Welsh slates, which were used by the Department more extensively than any other kind. They regretted, however, that they were unable to specify Welsh slates exclusively, as regard must be given to the locality in which the roofing material was required, and to the æsthetic considerations involved in each particular case. It was explained that the County Council committee appointed to negotiate with the Government, with a view to an increased use of Welsh slates on Government buildings, had had the assistance of Mr. Haydon Jones, M.P., and Mr. Ellis Davies, M.P. As a result of a recent interview at the War Office a hospital in Yorkshire was to be covered with Welsh slates, and others were to follow. In the case of Kinnel Park, Abergele, there was the difficulty that the estimate for roofing with timber and felt was 21*s*. per square, at which price it was not possible to use slates. But it was believed that the estimate of 21*s*. was too low, and that the cost was nearer 26*s*. They were hoping, however, to come to some arrangement soon.

A DEPUTATION, representing the operatives of the Glasgow and District building trades and the Glasgow Trades Council, were received by Glasgow Corporation on the 29th ult. relative to the letter issued by the Local Government Board as to the organisation of the labour force of the country at the present time and the curtailment of schemes for work involving capital expenditure. The speakers emphasised the argument that the stoppage of such schemes would involve unnecessary hardship upon the building trade. The object of the circular was to stimulate recruiting and to increase the production of munitions of war. As regarded the first point, it was contended that as an industry the building trades had contributed their creditable quota to the Army, while on the second the arguments were advanced that the Government had not organised the engineering trade as they might have done, and had failed to secure the full capacity of its output, and that until that had been done they should not call upon others who were not adapted to the work of manufacturing munitions. The deputation desired that the Council should proceed with schemes, so that no unnecessary unemployment might be caused. Lord Provost Dunlop, who presided, assured the deputation that their views would receive careful consideration, and no avoidable distress would be allowed in Glasgow if the Council could help it.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, May 14.

Royal Institution : Paper entitled "The Archives of Westminster Abbey," by Canon E. H. Pearce, at 9 P.M.

Town Planning Institute : Remainder of Paper entitled "Some of the Larger Problems of Town Planning," by Mr. Thos. H. Mawson, Hon. A.R.I.B.A., at 8 P.M.

Monday, May 17.

Royal Institute of British Architects : Paper entitled "The Evolution of the Architectural Competition," by Mr. H. V. Lanchester, F.R.I.B.A., at 8 P.M.

Wednesday, May 19.

Institute of Sanitary Engineers : Afternoon Visit to Mortlake.

Thursday, May 20.

London University : Paper entitled "Brussels," Part II., by Mr. P. Abercrombie, M.A., at 5.30 P.M.

Concrete Institute : Paper entitled "Lime Concrete in the East," by Mr. E. A. W. Phillips, M.Inst.C.E., at 7.30 P.M.

THE USE OF LEAD IN PAINTING OF BUILDINGS.

THE long-expected and much-deferred Report of the Departmental Committee appointed to investigate the danger attendant on the use of paints containing lead in the painting of buildings has at length appeared. The delay in its presentation appears to be due to the strenuous opposition on the part of those interested in the manufacture of white lead, consequent on the anticipation that the Report of the Committee would be in favour of the prohibition of lead in paint altogether.

It cannot in fairness be said that the Committee have not taken adequate pains to arrive at a correct judgment to the best of their ability, nor does there appear to us to have been any bias against lead amongst the membership of the Committee at the outset of their investigations and deliberations. The Committee were appointed on January 20, 1911, and have met on forty-nine days, of which thirty-seven were occupied in taking evidence, and twelve solely in deliberation. In all 118 witnesses were examined, of whom ninety-three were selected and called by the Committee as adequately covering all the aspects of the problem submitted for solution, viz. : Thirty-eight employers of house painters; eleven operatives' representatives; twenty-five representatives of makers of paint or paint materials; two consultants to paint makers; four chemists; two witnesses representing the Royal Institute of British Architects; four doctors and others with special knowledge of lead poisoning in the house-painting industry; five witnesses who dealt mainly with ship painting; two witnesses who dealt mainly with bridge painting.

The remaining twenty-five witnesses were brought forward by the White Lead Corroders' section of the London Chamber of Commerce, and included a certain number from France, Germany, Austria, Belgium, Holland, and Switzerland. "Their evidence," the Committee say, "might well have been regarded as irrelevant to the questions involved in the terms of reference; but, inasmuch as the interests which they represented were from an indirect point of view such as were most liable to be affected by any drastic interference with the present conditions of the house-painting trade, the Committee unanimously agreed that they should be heard, and the fullest consideration given to any argument which they had to adduce. In the event, their evidence proved to be very voluminous, and greatly extended the period occupied by the inquiry."

The members of the Committee were Sir Ernest Hatch, Bart.; Sir Godfrey Baring, Bart., M.P.; Lord Henry Bentinck, M.P.; Mr. E. L. Collis, M.B., Medical Inspector of Factories; Mr. F. G. Rice, President of the London Master Builders' Association, and representative of the National Federation of Building Trade Employers; Mr. W. G. Sutherland, Secretary of the National Association of Master Painters and Decorators; Mr. Archibald Gardner, Secretary of the Scottish Society of House and Ship Painters; Mr. J. Parsonage, Secretary of the National Amalgamated Society of Operative House and Ship Painters and Decorators. If there were any suspicion of bias in the composition of this Committee we should have been disposed to presume that it would be in favour of leaving things alone in the present practice of the paint-making and paint-using industries. The Committee's Report is unanimous, with the exception of Mr. Sutherland, who presents a minority report.

It would clearly have been unfair in the highest degree for the Government to have appointed on the Committee any individual interested in the manufacture of lead paint without also appointing a representative of the manufacturers of leadless paint, and it would as certainly have been unwise to appoint rival manufacturers to act in a judicial capacity when lead was on its trial.

An examination of the summary of evidence contained in the Report makes it clear that the use of lead paint is fraught with danger of lead poisoning to health and life. The battle between advocates of lead paint and leadless has been waged entirely around the preference, as a palliative of the admitted danger, between regulation and prohibition of the use of lead in paint, and we are not surprised that, on the balance of evidence from users of paint, the Committee should have come to the conclusion "that it is impossible to deal with the evil in question by regulations for four principal reasons: (1) the inadequacy of regulations to cope with the evil; (2) the difficulty of prohibiting dry rubbing down; (3) the cost and difficulty of complying with various precautionary measures; (4) the insuperable difficulty of enforcing regulations by adequate inspection."

The chief sources of danger in the use of lead paint appear to be the dust produced by dry rubbing down, either of old work or between coats, the splashing of paint on the hands and faces of painters, and the spraying of stippled work. Preventives suggested include the wearing of masks, the use of hot water, soap and towels immediately on quitting work, the provision of mess-rooms, the careful preservation of food, periodical medical examinations, frequent washing of overalls—a series of irksome precautions which any candid critic must admit would be frequently evaded by the bulk of British workmen.

Having arrived at the conclusion that the use of lead paints ought to be prohibited if possible, the Committee considered the questions: (1) Is there a reasonable cer-

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tainty that leadless paints would be efficient for all purposes? (2) Would the supply of such materials be sufficient to meet all the requirements of the trade?

The affirmative answers to the first of these questions were minimised by the conservatism of the painting trade in favour of traditional use and custom. There is, in short, a real prejudice in the trade against the use of any materials other than those to which painters have been for generations accustomed.

On the other hand, it was generally admitted that for the painting of interior surfaces it was quite possible to dispense with lead paints, and the evidence of the employers contains not a few examples indicating that, with only a moderate persistence, it is possible to discover leadless paints which, even for exterior painting, are quite satisfactory. There are instances of positive evidence that zinc paints with a very small percentage, 5 per cent. or less of lead, or leadless white paints made up with boiled refined oil and a good proportion of varnish are as durable, and some say more durable than white lead paint.

As regards coloured paints the Committee consider that a restriction of the use of lead to not more than 5 per cent. of soluble lead in any paint when mixed ready for use would not unduly hamper the decorator in obtaining the requisite range of colours, whilst for paintwork of a dark colour, graphite, bituminous, or coal-tar paints are suitable.

The Committee in their final recommendations advocate the introduction of a law prohibiting in this country the importation, sale, or use of any paint material which contains more than 5 per cent. of its dry weight of a soluble lead compound. In conjunction with such a restriction, the Committee state that it would be necessary to exempt specifically special classes of colours, such as those used by artists; and in addition that it would be desirable to provide powers of granting exemptions applicable only to very special branches of the general painting industry, where it could be shown to the satisfaction of the Secretary of State that the use of lead paints containing more than 5 per cent. of soluble lead cannot as yet be dispensed with; in such cases the Secretary of State should have power to enforce adequate precautionary measures—viz. abolition of dry rubbing down, provision for overalls, mess-rooms, cloak-rooms, lavatories, medical examination, and the like, all of which should be made compulsory and be enforced by adequate inspection.

To give adequate time for paint-grinders and others to arrange for supplies of non-poisonous materials, and also to facilitate the introduction of modifications in painting methods where special work necessitates such changes, the Committee recommend that the restriction of the lead in paints to not more than 5 per cent. of soluble lead should not be brought into force until three years have elapsed from the date of the publication of their Report.

Controversial and contradictory as is much of the evidence, as might be expected from so large a proportion having been specially organised by the White Lead Corroders' section of the London Chamber of Commerce, whose craft, like that of the silversmiths of Ephesus, is in danger, we are convinced that the Committee were justified in coming to the conclusion that the present use of lead paint results in avoidable ill-health and death to workmen, that it is possible to substitute leadless paints, even in our present state of knowledge and experience, and that there are adequate grounds for presuming that, with an open field freed from traditional prejudice, cheaper and more durable paints than those now in use will be produced without recourse to lead as a base in their manufacture.

SIR J. J. BURNET, R.S.A., has, it is understood, received the commission for designing the westward extension to Selfridge's Store in Oxford Street, W. The work will be additionally interesting from the fact that it is to be carried out in co-operation with Messrs. Graham, Burnham & Co., the well-known American architects.

NOTES AND COMMENTS.

IN the current number of *The Connoisseur* Mr. Haldane Macfall, in continuation of his series of articles treating of "The Years of Mahogany," makes special reference to the Chippendale chair as described in various phases of development in the *Director*, the three editions of which were published respectively in 1754, 1759, and 1762. The period from 1750-60 is, therefore, the particular epoch in Chippendale chair production, which is this month the subject of Mr. Macfall's article. During this period the invention of a "French" chair necessitated an introduction of "Chippendale rococo," of which a superb example is illustrated from the Winchester House mantel-piece, which, by the courtesy of the publishers, we are able to reproduce, as also an illustration of a "stuffed chair" from the same article.



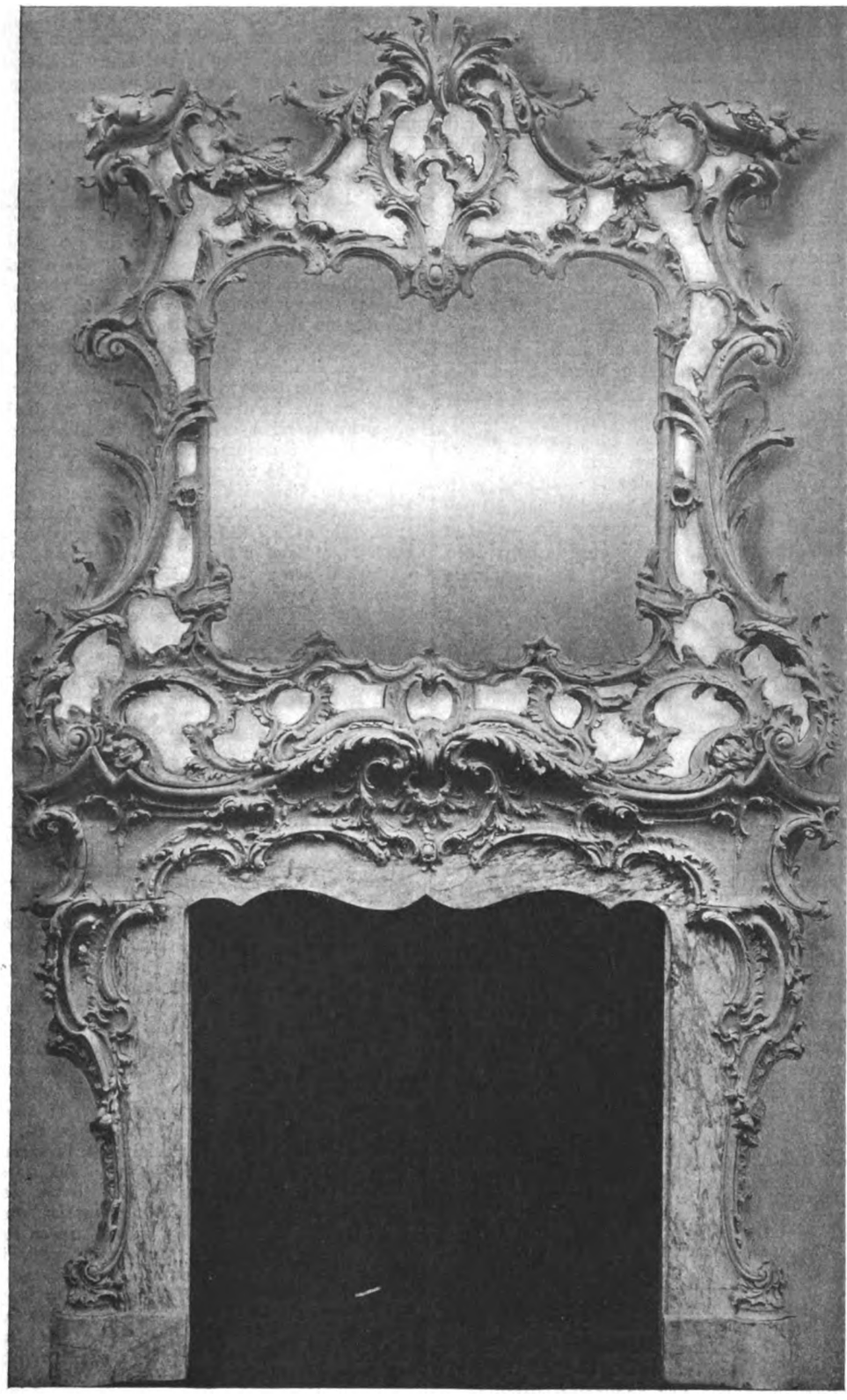
[From *The Connoisseur*.

Walnut Chippendale "Stuffed Chair" of 1750-60, showing angle brackets to legs. In the possession of Sir Edmund Hope Verney, Bart.

The decision of the Government to allow the London County Council to proceed, at least to a modified extent, in its scheme of improvement for elementary schools, to which we have already referred, could not, of course, be permitted in Parliament without criticism, and to a certain extent, opposition, and this it has encountered.

At a meeting of the Society of Antiquaries Sir William St. John Hope read a paper on the last testament and inventory of John de Vere, thirteenth Earl of Oxford, documents of considerable importance as illustrating the nature and value of the goods and chattels of a wealthy nobleman at the beginning of the sixteenth century. The value was estimated at £8,000 odd, which, said Sir William, represented about half a million of money at the present day. The Earl of Oxford was a man who experienced various vicissitudes of fortune; he escaped to France after the Battle of Barnet, and for some years was a prisoner in exile. He acted as captain-general to Henry's Army at the Battle of Bosworth, and on his restoration to place and power his great wealth soon enabled him to make good the losses he had sustained during his attainder and imprisonment. The inventory showed, in an interesting way, through the liberal use of heraldic decorations, how the Earl spent some of his wealth. The document is especially rich in lists of

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[From *The Connoisseur.*

MANTEL-PIECE IN "CHIPPENDALE ROCOCO," IN CARVED PINE.—FROM WINCHESTER HOUSE, PUTNEY, 1750-60.

magnificent pieces of plate, much household furniture and chapel stuff, and armour and weapons. One of the articles mentioned was a vessel, weighing 81 oz., "to warm water for my lord's beard," and another a chain and whistle, weighing 12 lb., which he wore as admiral of England. None of the articles which he left are known to exist.

Smoke abatement or the study of it is making some progress in Manchester, where there is, it must be admitted, plenty of scope for research and propaganda, to which the Air Pollution Advisory Board, appointed by the Manchester Sanitary Committee in December 1912, devotes itself. For this purpose the Board has appointed four sub-committees, known as the Chemical, the Statistical, the Legal and Administrative, and the Engineering.

Professor Gee has prepared a report of the Chemical Sub-Committee. A thorough investigation is being carried out to determine scientifically the nature and amount of soot and other impurities in the air, and also the loss of sunlight in Manchester due to the presence of smoke. This inquiry, which is being carried out at

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ten different stations in the city and district, is the most complete investigation of the kind that has ever been attempted, and has already yielded interesting and valuable results. Similar work is being carried on in fifteen other cities throughout the country. The Chemical Sub-Committee is proposing a further investigation into the question of the various types of domestic fire-grates. It is known that both the heating-power and the amount of smoke produced by different types of grates vary enormously, and it is believed that an authoritative pronouncement as to the merits of different types of grates would be welcomed by architects, builders, and by the general public, and would ultimately lead to a considerable reduction of domestic smoke.

Councillor E. D. Simon, the chairman of the Advisory Board, in summarising the general results, says it is already clear that valuable results are being obtained. It is only possible to give particulars of the methods and aims of the work which is being undertaken, together with some preliminary results. Even so, some interesting and striking facts emerge from the report of the Chemical Sub-Committee, such as, for instance, the discovery that the air of Manchester is so filled with dust and smoke that on a sunny day no less than 10 per cent. of the sunlight is cut off in passing through the last 100 feet of the atmosphere. The Board is convinced that the public do not yet realise either the economic cost of the smoke evil, nor, what is more important, the effect it has on health and happiness through the mental depression which results from living in an atmosphere of gloom. Methods are already known which, if more widely adopted, would greatly improve the state of the atmosphere without inflicting hardships on manufacturers or others.

By means of the standard apparatus for collecting rain-water it is possible to ascertain the amount of soot and other impurities in the air. Ten gauges have been erected at various city, residential, industrial, and country stations, and certain results obtained from them. Until tests have been made for a much longer time it will not be safe to draw general conclusions with reference to various periods of the year and different localities. Sufficient evidence is, however, afforded by these preliminary results to show that the amount of air pollution in industrial localities is very serious. It may, perhaps, be better realised by converting the values to British weights and measures. Thus the total solids collected in Whitworth Street in July is equivalent to 62.2 British tons per square mile. Hence, if we draw a circle of a mile in radius, with the Town Hall as centre, about 195 tons of impurities would be collected during the month from this area (assuming the above figure an average one). Of this about 100 tons will consist of soot or other insoluble matter. A striking difference between the appearance of the collected rain-water for January 1915 at Bowdon and Ancoats is shown. At the latter place the soot, &c., was over eight times the weight of that of Bowdon.

It is rather unfortunate for the cause of smoke abatement in Manchester that the stress of war conditions has forced the Gas Committee of the Council to raise the price of gas by sixpence per thousand cubic feet. The use of cheap gas is essential to the solution of the problem of reducing a town's output of smoke from domestic fires.

WAR ITEMS.

LADY BUTLER, the painter of the famous picture "The Roll Call," and other well-known military works, has been engaged for the past two years on an exhibition of pictures dealing with the Waterloo Campaign of 1815, of which this is the Centenary, and it will be held shortly at the Leicester Galleries, Leicester Square. The loan of her picture "Scotland for Ever" has been obtained from the City Art Gallery, Leeds, and for this exhibition Lady Butler has painted a companion picture, "The Last Réveille of the Cuirassiers on the Morning of Waterloo."

All the works, with the exception of "Scotland for Ever," will be for sale, and Lady Butler has generously decided to hand over the proceeds therefrom to the Officers' Families' Fund.

ART IN LONDON.

MR. HARRY GOODWIN IN NEW BOND STREET.

IT is not often that we leave an art gallery with such a concentrated sense of envy on the occasion of our exit from the Dowdeswell Galleries after visiting the exhibition of Mr. Harry Goodwin's water-colour drawings of "Swiss Mountains and English Cathedrals." The prevailing sensation was one of desire to possess nearly all of the half-hundred exhibits, which had a chez-nous air that spoke well for Mr. Goodwin's sympathetic power of transference from Nature to drawing-block. If we had any intention of animadversive criticism it would soon exhaust itself "for lack of argument." But such criticism, however slight, would be ungracious in the presence of such work as "Durham Cathedral" (3), "The Jungfrau from the Kleine Schiedeck," "Ludlow," "Salisbury Cathedral," "St. Michael's" (15 and 51), "Poppyland," and so many others. "Lago d'Orta" in Italy and our own Wells Cathedral are portrayed in juxtaposition, the latter being notable for complete effacement of detail upon the western façade through the presence of a morning mist. "Folkestone Harbour" is a revel of colour, and "A Roman Fragment, Acqui," is a colour poem. With "Autumn Mists, Canterbury," Mr. Goodwin ended his show upon the same high level as his works displayed throughout.

BRUGES AND YPRES.

AT University College, Gower Street, W.C., on Thursday of last week, Mr. Arthur Stratton, F.S.A., delivered a lecture on "Bruges and Ypres," being the fourth of the series arranged by the Carpenters' Company on the "Architecture of Belgian Towns." In the unavoidable absence of the Belgian Minister, who was announced to preside, the chair was taken by Professor Adshead. In the first part of his lecture Mr. Stratton dwelt upon the conditions which had tended to shape the building arts in Western Flanders, and he laid stress upon the geographical position of Bruges and Ypres in relation to the open sea, for in that and in the facilities for foreign trade and communication between the different centres by means of natural and artificial waterways lay the secret of the commercial supremacy of these Flemish towns in the Middle Ages. Bruges and Ypres were two of the powerful commercial cities of Flanders, engaged in the far-reaching industry of weaving and exercising an immense influence over the fortunes of Western Europe. The prosperity of East Anglia was directly attributable to the commercial relations fostered between the two countries, and in due course led to the importation not only of ideas but of craftsmen as well, who played a far greater part in shaping the building crafts of this country, at different periods, than is commonly recognised. With their lofty towers proclaiming their power and independence for miles around over the flat country, Bruges and Ypres had passed through troublous times, and had been shorn of the greater part of their splendour long before the dangers of the present war beset them. By means of old engravings, Mr. Stratton gave a good idea of what they were like at their zenith—Ypres in the thirteenth and fourteenth centuries and Bruges in the fifteenth century.

The buildings, he said, rose in response to the calls of civic pride, commercial success, and religious zeal, while the extraordinary vitality of the Fleming impelled him to do nothing by halves, and to excel in a building art which exactly corresponded to the needs of the time and to the temperament of the people who evolved it. It was impossible to understand the architecture without some knowledge of the lives of the people and the ideals they strove for. Under the Burgundian rule, Bruges was a brilliant centre of artistic life, and Louis of Bruges, in his Hôtel Gruthuise, might well be likened to Lorenzo de Medici in the way he encouraged artists of all kinds. The influence of the Gothic art of modern France was evident in the church

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work, but the civic and commercial buildings were unique. First the belfries and "Halles" and later the town halls and town houses show this architecture at its best, for the Flemish builders were concerned primarily with towns and cities, and one sought the soul of the building craft in the open squares and along the narrow streets and beside the busy quays rather than in the open country or in the streets of wayside hamlets. It was not an academic style, but was essentially picturesque in the best sense of the word, relying primarily upon colour and texture of material and good craftsmanship. These towns gave the general impression of having been built of brick, but stone was largely used for the more important civic and ecclesiastical buildings, especially the earlier work.

By means of a large number of lantern slides Mr. Stratton illustrated the characteristic buildings as well as street and canal scenes in Bruges and Ypres, and expressed the fear that by the end of the war Ypres would be little more than a vast rubbish heap. It was already known that the incomparable Cloth Hall and the fine church of St. Martin had been pounded to bits together with the numberless works of art of inestimable worth which they contained. The lecturer's wish that Bruges, the most entrancing city in Western Europe, might come through unscathed was re-echoed by the large audience, representative of the two countries, who followed the lecture with evident interest.

COMPETITION NEWS.

SOUTHEND-ON-SEA.—The Borough Council at their last meeting considered and adopted the assessors' report in the recent competition for the proposed tuberculosis hospital. The names and addresses of the successful competitors were, viz.: Design No. 16, first award—Mr. Percy Brockbank, 13, 14, and 15 County Chambers, Southend-on Sea; Design No. 7, second award—Mr. H. Lord, 42 Deansgate, Manchester; Design No. 6, third award: Mr. J. Jameson Green, Adelphi Bank Chambers, 19 South John Street, Liverpool. The assessors were Mr. Frank Whitmore, consulting architect to the Essex County Council; Mr. Ernest J. Elford, M.Inst.C.E., borough engineer and surveyor; and Dr. C. Grant Pugh, local Medical Officer of Health. Their report states: "We beg to report that seventeen sets of designs were submitted in the above competition. In the first instance each of us independently examined the designs and later we met upon several occasions in consultation. In arriving at a decision as to the merits of the respective designs, we have borne in mind the question of future extensions, and have had regard, in the main, to the following considerations, viz.: (1) Position of the several blocks of buildings with a view to the latter being used to the best advantage; (2) the nature of the accommodation provided in the ward pavilions for patients; (3) the general arrangements with a view to the efficient and economical working of the Institution. Each of us independently came to the conclusion that Designs Nos. 16 and 7 were the best submitted and, after careful consideration and consultation, we arrived unanimously at the conclusion that Design No. 16 should be awarded the first premium, and that Design No. 7 should be awarded the second premium. We are of opinion that Design No. 6 should be awarded the third premium. Design No. 16 is a very carefully prepared and well-thought-out scheme. The buildings are grouped at the extreme northern portion of the site. The administration block lies between the two ward pavilions, all facing south. The dining-hall and kitchen block lies behind and is connected with the administration block and pavilions by two covered ways. The laundry and disinfecting block is in the rear. The future extension shows south of the pavilion to be erected forthwith a pavilion with further accommodation for adults and special provision for children. In Design No. 7 the buildings are placed approximately halfway down the site, with the administrative block on the west side facing west and the ward pavilions on the south side, with kitchen block at the rear and connected by covered ways. In future extensions an additional ward pavilion is proposed north of the kitchen block." Arrangements have been made for the plans and designs to be on view to competitors on Thursday, Friday, and Saturday, May 13, 14, and 15, at the Council Chamber, Clarence Road, Southend-on-Sea, between the hours of 9 A.M. and 6 P.M.

ILLUSTRATIONS.

MIDDLESEX GUILDHALL, WESTMINSTER.

THESE buildings are erected on an island site of about 17,150 square feet, having a frontage of 102 feet to Broad Sanctuary facing Westminster Abbey, and 160 feet to Little George Street. Practically all the offices are lighted from the surrounding streets. The new buildings had to be designed for the dual purpose of carrying on the business of the Middlesex County Council and for the work of the Quarter Sessions of Middlesex. The southern end of the site was covered by courts erected towards the end of the eighteenth century, and offices for the Middlesex County Council were built in connection with these about seventeen years ago, but owing to the large increase of staff and the work to be done, it was decided in 1910 to demolish all these buildings and erect the present structure. During the excavations a discovery was made of a heavy rubble concrete raft, which may have been the foundations of the isolated thirteenth-century belfry of the Abbey. The latter was a stone tower 60 feet high, with a leaded spire, and was destroyed about 1760. The raft was 5 feet thick, and about 80 feet by 70 feet, and it rested on elm and beech piles, closely spaced and about 10 feet long. The foundation of the new tower is a reinforced concrete raft, 3 feet thick, reinforced with Kahn bars. This raft carries the six stanchions supporting the tower, the weight of which, including the floors, &c., is about 1,800 tons. The new building is five storeys in height. The greater part of the basement is allocated to the Prison Department, being subdivided into about 100 cells, with warders', wardress's, police, and lavatory accommodation, also witness-room. The heating and ventilating chambers are to the south, and the remainder of the basement is sub-divided into record-rooms, brick-vaulted, for the safe storage of the many valuable records belonging to the County Council. The main entrance is on the east, and gives access to a large vestibule, with the main stairs and lift on the left. A wide corridor runs round the building. The larger court is in the centre, lighted from two internal areas, and with direct access to the vestibule, with a smaller court at the north end. Both are two floors in height. On this floor are private offices and private rooms for members. Committee and private rooms are on the first floor. On the second floor, over the large court, is the Council Chamber, two floors in height, planned to seat about 110 members and officials. To the east of the Council Chamber is a large ante-room. The remainder of this floor and the third floor are offices, with caretaker's room to the north, ample lavatory accommodation being provided on every floor. The four elevations are in Portland stone. The height to the wall head, from the pavement, on the main fronts, is 50 feet, and to the top of the parapet of the tower, 108 feet. The building generally is steel framed, with a hollow tile reinforced concrete floor. The heating is on the vacuum steam system. The courts, Council Chamber, committee corridors, &c., are heated by radiators with the usual fresh-air inlet. There is one passenger lift (adjoining the main staircase) and three service lifts. There are two drainage systems, the rainwater being at the basement ceiling and the soil and waste being at a low level, with an injector to raise it to a sufficient height to prevent flooding from the sewer. The three friezes by Mr. H. C. Fehr over the entrance, reading from left to right, represent: "Magna Charta Granted by King John," "Henry IV. Granting a Charter to the Abbey," and "Lady Jane Grey Accepts the Crown." Underneath are the coats of arms of the most important figures. The niches above show "Government," "Law," and "Educational Arts," while the small figures over the windows deal with the different industries of England. The inside figure corbels likewise deal with such subjects as "Law," "Arts," "Engineering," and "Science."

The general contractor was Mr. James Carmichael, of Wandsworth. Messrs. J. S. Gibson, Skipworth & Gordon were the architects.

Among the sub-contractors were the following: Fire hydrants, &c., Merryweather & Sons; panelling, upholstery and carving in Council Chamber and ante-rooms, Wylie & Lochhead, Ltd.; locks, ironmongery, door and casement fittings, &c., James Gibbons; leaded and stained glass work, Abbott & Co.; decorative plaster, Gilbert Seale & Son; sanitary fittings, J. Bolding & Sons, Ltd.; paving, Stuart's Granolithic Company; sculpture, H. C. Fehr; furnishing, J. Shoolbred & Co.; cupboard latches and bolts, Josh. Kaye & Sons, Ltd.; metal casements and sashes, British Luxfer Prism Syndicate, Ltd.

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ROYAL SOCIETY OF ARTS.

AN ordinary meeting of the Royal Society of Arts was held on Wednesday, May 5, at their premises, John Street, Adelphi, W.C. Mr. F. W. Goodenough, M.Inst. Gas Engineers (Gas Light and Coke Company), occupied the chair.

Mr. Augustus Vernon Harcourt, D.C.L., LL.D., D.Sc., F.R.S., read the following paper entitled

ON THE MEASUREMENT OF THE EFFICIENCY OF DOMESTIC FIRES, AND ON A SIMPLE AND SMOKELESS GRATE.

Several months ago a friend told me that he had got a box of some stuff which would make one ton of coal go as far as two. Would I come and see it tried?

I found that the box was a cardboard box holding about half a pint of a pink powder. A heaped teaspoonful of the powder was to be stirred up in a pint of water and three scuttles full of coal sprinkled with this mixture. The disproportion between the size and number of the lumps of coal and the teaspoonful of powder which was to be distributed over their surface was so great that it was difficult for anyone whose business has been experimental chemistry to go through this sprinkling seriously. However, it was done, and has been done for me many times since. But neither then nor in subsequent trials, using a grate well adapted for such observations, could any material difference be found in the rate of burning with and without the powder. What difference there is seems to be due to the water, which is used as a means of distributing the powder. If coke be thoroughly wetted, it absorbs a large volume of water, and the life of the fire is much lengthened; with a feeble draught it might even be doubled; but with lumps of coal the effect is much less.

Since the pink powder consists chiefly of common salt, the effect of dissolving a quantity of salt in the water was tried, but no further diminution in the rate of combustion was observed.* A salt more fixed in the fire, such as sodium sulphate, would doubtless be more efficient; but some heat is lost if coal or coke is wetted, and in an open grate neither needs to have its combustibility diminished unless there is an unusually strong draught. When this is the case, an admixture of breeze or small coal, of which there is generally more than enough in a coal cellar, will check the draught and reduce the rate of burning.

There remains the question of the output of heat. Chemists, and, indeed, everyone who has a little knowledge of chemistry, will agree that the total amount of heat caused by the combustion of a pound of coal will not be increased by the addition to it of rather less than one grain—that is, one seven-thousandth part—of any kind of incombustible material.† But it may be rightly objected that it is not the total amount of heat which concerns the householder, but the amount of heat radiated into a room, and this cannot be so easily and exactly measured. A minute proportion of common salt in the air around an atmospheric burner enormously increases the light radiated from it. Why should not the same agent cause some corresponding increase in the heat radiated from a lump of coal?

The desire to settle this question, by measuring the amount of heat radiated into a room, led me to design, and have made, a little instrument for the purpose, and, having worked with it, to offer to your Society an account of the instrument and its results, and at the same time to bring before you a form of grate, the more remote and the immediate ancestors of which have added to my comfort for some forty years, but whose efficiency with various fuel I have only measured in the last few months.

The instrument, which, for want of a shorter name, I call a radio-thermometer—that is, measurer of radiant heat—consists of a copper box, 6 in. × 6 in. × 1 in., with a small funnel-shaped inlet, enclosed in a wooden box, 7 in. × 7 in. × 2 in., open at the top and with an opening 5 in. square in the middle of one side. Except on this side there is a space between the two boxes, of an inch at the back and half an inch at the sides and below, which is loosely packed with cotton-wool. Of the side which is in contact with the wood the central 25 square inches is exposed and has been blackened. A thermometer is held by a cork in the opening at top, which is also used as a stirrer, being furnished with a cup-shaped piece of rubber sheet tied on above the bulb, which stretches across the box.

The weight of the copper box is 11 oz., that of the water which fills it is 1 lb. 6 oz. The water equivalent of the copper box is 11 × .095 = 1.045 oz. Hence the mass of water heated may be taken as 1 lb. 7.04 oz., or 1.44 lb. The instrument having been freshly filled with cold water, is placed facing the middle of the fire at a distance of 3 ft. Exactly at some minute by the watch the thermometer is read. About nine minutes later the water is briskly stirred up and down with the thermometer, which is then replaced with its bulb central, and at the end of ten minutes the thermometer is again read. These readings are repeated every ten minutes until the temperature of the water is as much above the temperature of the air, taken by a thermometer at the back of the instrument, as it was below it at starting. The cotton-wool, which checks the flow of air round the box, prevents the temperature of the air of the room having much influence, and both this and the exchange of radiations are approximately balanced by the temperature of the water being to an equal extent, and for nearly the same time, first lower, then higher, than that of its surroundings.

A set of observations thus made generally occupies nearly an hour, and gives an average result for that period. To make the results, when at different times the fire was larger or smaller, more comparable, an estimate was made, every ten minutes, of the area of fire from which the chief part of the heat was being radiated, as being so many spaces. The bars being 18 in. long with 2 in. between them, a space was 36 square inches. Though each estimate was only approximate, the average will not have been far wrong.

An example will show the plan which has been followed:—

February 25, 1915. Barometer, 30.2. Temperature of air in room, 57°.0. Grate charged with coke. Fire lit at 8 A.M.

Time	Temp. °F.	Rise in 10 mins. °F.	Spaces.	Balance of Temperatures °P.	°F.
IX. 26	35·8	...	3·0		
36	41·6	5·8	3·3	57·0	78·5
46	48·0	6·4	3·5	35·8	57·0
				21·2	21·5
56	54·7	6·7	4·0		
X. 6	62·2	7·5	4·3		
16	70 4	8·2	5·0		
26	78·5	8·1	5·0		
Average	...	... 7·12	4·0	Average rise for 1 space	1°·78

The heat radiated from 36 square inches of fire-front, corresponding to a square 6 inches in the side, upon a surface of 25 square inches, at a distance of 3 feet, in ten minutes, raised the temperature of 1.44 lb. of water 1°.78 F. Since all these measures but the last are constants of the method, the result may be called 1.78 units.

If these units, which serve for the comparison of one grate or one fuel with another, are multiplied by 25.2, the total amount of heat sent into the room every minute from each 6 inches square of the front of the fire, is given in British thermal units.*

A large number of measurements have been made of heat radiated from coal and from coke, and from coke which had been wetted, and from coal and coke treated with the pink powder in the manner prescribed. The grate chiefly used was one whose division into many spaces and flat vertical front adapt it for this purpose. The whole charge of fuel is put in at once, and heaped up above the top bar into the throat of the chimney before the fire is lit. The fire burns gradually downwards, like a candle, and lasts the day through.

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* An analysis of the powder made for me by Mr. R. E. Steel, Natural Science Master at Sherborne School, gave the following result:—

Sodium chloride	83.85
Calcium carbonate	8.71
Ferric oxide	2.88
Silica	0.69
Water	3.57
	99.70

† One heaped-up teaspoonful is to be sprinkled over one hundredweight of coal or coke. Four heaped-up teaspoonfuls weigh about one ounce, whence approximately 64 weigh one pound, and 7,168 one hundredweight.

* $\frac{1{\cdot}44 \times 175}{10} = 25{\cdot}2$. Multiplication by 1·44 increases the result to what it would have been if only 1 lb. of water had been heated. Division by 10 reduces it to what it would have been if the heat had only been applied for one minute. 175 is an approximate estimate, furnished me by Mr. Sydney Lupton, of the number by which the heat falling normally upon a surface of 25 square inches must be multiplied to represent the total heat radiated in front of the fire in every direction.

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The average results, in units of the method, are as follows:—Coke, 1.97; coal, 1.63; wet coke, 1.29; coke or coal sprinkled with water and powder, 2.03. The numerical results are given, but must only be regarded as rough approximations indicating little more than the order of magnitude. The precaution was taken of allowing the fire to burn for some time before measurements were made, both that the chimney might have attained its full temperature, and that a sufficient space might intervene between the top of the fire and the opening of the chimney to lessen the effect of the draught up the chimney. Even so, the effect of wind—and probably also, though in a less degree, of outdoor temperatures and moisture—is such that observations would need to be made over a long period if a more accurate average were necessary.

The actual results are intelligible and probable. Coal when it burns passes through two distinct stages. First it gives off gas, some of which burns, while some, not coming in contact with anything sufficiently hot or being mixed with too much steam or nitrogen, escapes unburnt. When evolution of gas has ceased the coal has been changed to coke, and the second stage begins. Thenceforward it burns with a steady glow. Much less heat is radiated out during the first stage than during the second; the heat from the burning gases goes chiefly up the chimney. Thus when the heat from a coal fire is fairly measured, some parts being in one stage and some in the other, the result is lower than when all is in the second stage or, which is the same thing, when coke is being burnt. Wet coke, if sufficiently wet, gives still less heat at any moment, for it burns more slowly, and some of its heat goes to evaporate the water. When the fire is dull-red the steam from water beneath escapes and makes no sign, but when the upper part is glowing brightly the steam is successively decomposed and recomposed, the pale flame of hydrogen, though mixed with an equal volume of carbonic oxide, being distinguishable from the blue flame of carbonic oxide, which air without steam produces.

Coke treated with powder or untreated radiates practically the same amount of heat, a result which will not surprise members of this Society.

I remember another little box much in demand sixty or more years ago. It was filled with little bottles containing homœopathic globules which good people took and gave to their friends, having a confident belief in the benefits which followed. In that case, as with other more plausible drugs, the belief could not readily be put to the test of comparative experiment. In the case of a physical agent this test is readily, though not commonly, applied. It seems that we are not wiser than were, according to Mr. Kipling, "Our fathers of old."

Bulk for bulk, coal is nearly twice as heavy as coke, burns for longer under the same conditions, produces more heat, and from an open grate radiates rather more heat, because it lasts much longer.

Weight for weight, coke has the advantage for domestic use, and would retain it even if through increased demand the price of the two were the same.

If public benefit can be brought into account, the advantage of the use of coke for domestic fires is very great. The fires are smokeless. Nearly one-quarter of the coal consumed in the United Kingdom is burnt in domestic fires.



FIG. 1.—A GRATE IN WHICH THE FIRE IS DRAWN UP BY HANGING PLATES.

The grate of which, in conclusion, I have still to give a description, or rather one of its predecessors on the same principle, was used with coal only for many years, and used to be nearly smokeless after the first hour. By that time the top layer of coal had passed through its first stage of flame and smoke, and had become a layer of glowing coke. Through this layer the gases given off as the heat spread to the coal beneath, with their light burden of particles of soot, had to pass on their way to the chimney; all that was combustible, whether gas or soot, was burnt, and thenceforward for the rest of the day the fire was smokeless. A few years ago it occurred to me that it might be well to mix coal with the coke; the proportion of coke was gradually increased, and latterly I have used coke only, excepting that for lighting the fire a few pieces of coal are helpful (not necessary), as well as paper and wood.

Where a fire is needed for a short time only a gas fire is best. One of these, with good pressure and a consumption of about 35 cubic feet of gas per hour, gave as much heat

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as three spaces of the coke fire, or as a good drawing-room fire of the ordinary type. For equal times of burning, the cost of the gas fire is much greater. The charge of coke which fills the grate and maintains a good fire for fourteen hours, as from 8 A.M. to 10 P.M., is 34 lb., which, with coke at a peace price of 18*s.* per ton, costs only 3½*d.* Gas giving as good a heat, and burning at the rate of 35 cubic feet per hour for the same time, would, at the rate of 2*s.* 6*d.* per 1,000 cubic feet, cost nearly 1*s.* 3*d.* But when a fire is needed for only half an hour or an hour, as in a dressing-room, the immediate lighting and extinguishing, together

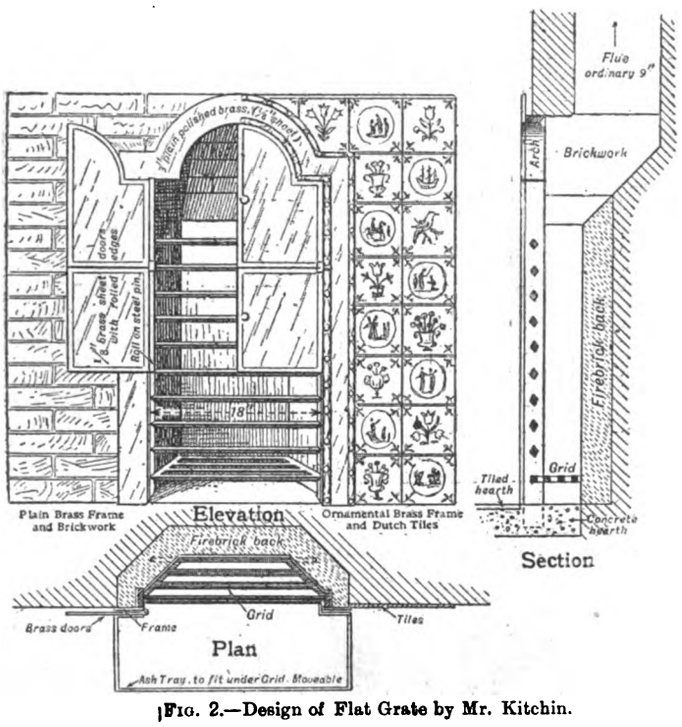


FIG. 2.—Design of Flat Grate by Mr. Kitchin.

with the absence of all trouble of emptying ashes, cleaning, laying, and lighting, turns the scale in favour of gas.

In the construction of a grate to yield as much radiant heat as possible from the fuel consumed, certain principles should be observed: (1) The face of the fire should be vertical, so that the chief radiation should be horizontal, not directed upwards towards the chimney and the ceiling; (2) the bars should be as slight as is compatible with sufficient strength, and as wide apart as will suffice to prevent more than an occasional ember falling out; the reason is that the bars do not reach a red heat, nor radiate so much heat as an equal surface of the fire behind them, and to the extent of the difference they act as screens; (3) for a similar reason the fire should be narrow from back to front. A space of 4 or 4½ inches between the back and the bars is enough; only the glowing surfaces which can be seen from in front radiate heat into a room, and lumps of fuel which hide other lumps and the red-hot firebrick behind them, act as screens, whether they themselves are dark or glowing; (4) air should pass in through bars in front, not through bars beneath; for the most vivid combustion occurs where the air and fuel meet. If this is at the bottom of the fire, much heat is radiated on to the hearthstone below, and helps to send a current of heated air up through the fire, promoting the burning of the coal, but not to good purpose; (5) to save the trouble of frequent attention and replenishing from a coal-scuttle during the day, and to avoid smoke, it is well to put in at once all the fuel the fire will need and to light it at top; (6) coke burns down more quickly than coal, and thus, especially with coke which has been "graded" and the light combustible coke from vertical retorts, the fire may reach its full heat near the middle of the day when its services are less needed than earlier or later. Control of the fire can be obtained by means of an iron plate put in when the fire is being laid, half-way up, resting on two or three lumps of coke only, that air may circulate underneath and prevent it becoming so hot as to ignite the coke beneath. When the fire is low the plate is pulled out, and the lower half of the fire makes a fresh start; (7) some means are needed for drawing up the fire when it is low. Either plates may be hung on one beneath the other, or folding doors may be arranged to close the upper part of the grate, and so concentrate the pull of the chimney upon the face of the fire beneath.

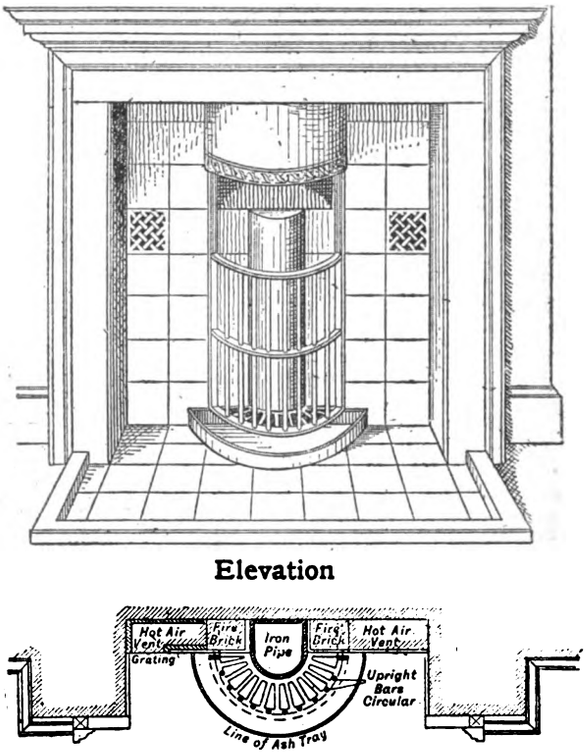


FIG. 3.—Design for a semicircular grate in which hot air from the back of the Fire passes into the Room.

The grates have been constructed on these principles. A serious difficulty has had to be met, for which there is no scientific solution. The grate must not be less attractive in appearance than other grates. Its simple character and the unavoidable display of a large unrelieved surface of coke or coal make this difficult. I appealed, but unsuccessfully, to a well-known artist who has professed a keen interest in smoke abatement. More recently I have communicated my ideas to an architect, Mr. George Herbert Kitchin, of Winchester, of whose taste and skill I have had experience, asking him to do what was possible towards producing an attractive design and to arrange for the manufacture of grates in accordance with his design.

Discussion.

Mr. F. W. Goodenough (the chairman), in opening the discussion, said the paper contained at the beginning a surprise not indicated by the title, and that was the courageous way in which it exposed certain claims which had been made upon the public credulity in regard to the influence of a certain powder upon coal. As regards the abolition of smoke, it was generally known that the result of the diminution of smoke in London during recent years was an increase in the average hours of sunshine by something like eighty per annum. The vitalising effect of sunshine was not easy to measure, but it could not be doubted. The comparisons published by medical authorities between the lungs of town dwellers and the lungs of the country dweller were evidence of the bad effect of the smoke and gases given off by the crude fuel burnt in grates and under boilers. As the author had indicated, the solution of the smoke trouble lay in the use of coke and gas. He believed and hoped that the paper will result in the increased use of coke for domestic purposes. The ideal evidently was coke for constant use and gas for intermittent use. Only that day there had come to hand the result of an investigation by the Manchester Corporation on the question of gas and coal fires, which showed that although coal fires were cheaper in comparison with gas stoves for rooms used continuously all day, gas stoves were more economical and produced a more rapid rise of temperature in cases where rooms were used intermittently. There were also in their favour greater cleanliness and a saving in labour. The Manchester Corporation have decided to substitute gas fires for coal fires in the town hall in order to give a lead to smoke abatement in the city. In considering the question of the

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use of gas in substitution for coal or coke it is necessary to regard the domestic budget as a whole and not merely one fuel bill against another.

Mr. L. B. Atkinson thought all must be gratified at the way the author had disposed quite scientifically of the extravagant claims made by the manufacturers of certain powders, supported by many great names. Although the discussion of fireplaces and firegrates had been going on during a very long period, it was extraordinary how the root of the matter was not approached. There had been discussions for the past few years as to whether what was required was to heat the air of a room or the objects in a room. On the whole it was more comfortable to have bodies in a room, both animate and inanimate, warmer than the air rather than to have the air warmer than those bodies. The author's grate heated the objects in the room without heating the air. There was probably some balance between the two systems which was the most convenient of all. In his own home he (the speaker) had a hot-water central heating apparatus by which he kept the air heated to about 55 degrees; and he only lighted the fires for sitting around. Different grates varied enormously. There were grates which would heat the air by passages behind them and so on; and there were other grates which would heat by radiation with very little warming of the air. About ten years ago tests were carried out under the auspices of the Smoke Abatement Society as to the efficiency of various grates. The results showed that of the total heat of the coal burnt, that which was lost in the flue gases varied between 8.7 and 14 per cent. That meant that the percentage of the total heat burnt which was given to the walls of the room, chiefly by radiation, amounted to, on an average, 88 per cent. There were forms of grates burning coal which were almost unsurpassed in their efficiency in getting the heat from the coal into a room. Few people realised that coal grates have reached such efficiency.

Professor W. R. Dunstan, F.R.S., congratulated the author on his courage in exposing one of those very ingenious claims which are perpetrated from time to time on the uneducated public, who in this instance gave testimony of their own experience—testimony which was not worth the paper it was written on, though it doubtless represented their firm belief as to the saving which resulted from the use of the powder. The use of coke for a fire carried with it the objection that it required rather more attention than coal. To burn coal and coke together was not an economical proceeding. It appeared to him that the real solution of the smoke question lay in a general use of gas. He believed in the end people would be converted to the use of gas fires, especially those worked upon the incandescent principle. If cheap gas could be obtained smokeless fires would result; but so long as the price of gas was as high as at present, its general use was impossible.

Dr. T. M. Legge suggested that the author should enlist the interest and artistic capability of tile makers in his grate. So long as a fire is set in those highly glazed tiles, as smooth and polished as they can be made, it can never be a beautiful thing, for it was the tiles round the grate which made it beautiful. Tiles should have rough surfaces and break up the light, not reflect it.

Mr. John Slater, F.R.I.B.A., thought that the great efficiency of modern grates had been brought about by diminishing the depth of them. With regard to the cost of gas fires, he felt, owing to a recent experience of his own, a great deal of sympathy for the speakers who had complained. Could not the town gas companies instal a separate meter for heating purposes and charge a lower rate for the gas so measured?

Mr. A. H. Barker contended that the tests made ten years ago which had been alluded to by a previous speaker were absurd, and that no such efficiency as 86 per cent. had been attained by a coal fire.

A vote of thanks was then passed to the lecturer and the meeting terminated.

THE *Pall Mall Gazette* has again given full measure in their familiar orange-covered annual, "Pictures of 1915." Purchasers will, as in the past, be assisted by it to arrive at a verdict of a "good" or a "bad" Academy free from the eye strain and general fatigue often induced by a visit to Burlington House. We do not suggest that it should serve as a substitute to visiting the galleries, but only that it makes for a more reliable judgment and, perhaps, a keener appreciation of what is seen in haste on the walls.

THE CONCRETE INSTITUTE.

THE sixth annual general meeting of the Concrete Institute was held at Denison House, 296 Vauxhall Bridge Road, Westminster, S.W., on Thursday, May 6. Professor Henry Adams, president, occupied the chair.

According to the annual report there were on April 30 of this year 935 Members, 40 Associate Members, 8 Associates, 64 Students, 5 special Subscribers, and 14 Honorary Members, making a total of 1,066. Of this total 364 reside in London and its environs, 398 reside in the provinces, and 304 abroad. The increase in membership since the previous figures were given in the Report for the 1913-14 session is fourteen.

The finances of the Institute are shown by an accompanying Balance Sheet. In 1913 there was a deficit. In 1914 there has again been a deficit, but a smaller one, owing to an appeal by the former President, Mr. E. P. Wells, suggesting that members should increase their subscription to the new rate of two guineas, which was adopted when the total membership of all classes had reached one thousand. The new subscription rates and entrance fees have also improved the income. It is hoped that when peace is declared and business has resumed its normal course, the past rate of growth of the Institute in members and income will be resumed.

The extra number of general meetings has been maintained, but in view of a number of the junior members joining the Forces, the Educational Lectures and the Informal Meetings of Junior Members were abandoned for this session; such educational work will be resumed in the future.

In conformity with other technical societies, it has been decided not to hold an Annual Dinner this year.

The attendance at meetings during the past session has been well maintained.

As the result of a ballot among Members of Council, the bronze medal for the best paper read in the 1913-14 session has been awarded to Mr. W. Cyril Cocking for the paper entitled "Calculations and Details for Steel-Frame Buildings from the Draughtsman's Standpoint."

As regards the work of the Council and Committees during the past year, the chief business has been the further consideration of the Regulations proposed to be made under the provision of Section 23 of the London County Council (General Powers) Act, 1909, with respect to the construction of buildings wholly or partly of reinforced concrete. A revised draft of the proposed Regulations was received in September, and the Council and Committees in joint Session reconsidered the matter, and made various recommendations for further amendment. It was found that the Institute's previous suggestions had been embodied in large part in the revised draft.

A letter was addressed by the Quantity Surveyors' Association to the Commissioners of H.M. Office of Works and Public Buildings deprecating the preparation, by the Consulting Engineers (employed by the department to make calculations and prepare drawings for reinforced concrete structures) of bills of quantities upon which competing contractors based their tenders, and advocating the extension to such work of the present system, under which quantities for buildings erected in other materials were prepared by surveyors appointed by the department. The Council of the Concrete Institute, together with the Quantity Surveyors' Committee of the Surveyors' Institution, gave its support. The letter inquired whether a deputation from the three bodies in support of this suggestion would be received, but nothing has yet resulted.

The Council nominated Mr. H. Kempton Dyson, Secretary of the Concrete Institute, to fill the vacancy created by the death of Mr. Kirkaldy upon the Joint Committee on Reinforced Concrete conducted by the Royal Institute of British Architects.

The Rules and Syllabus of the proposed examination of the Concrete Institute were appended to the previous Report of the Council. The Council has decided that the first examination shall be held early in June 1916, of which due notice will be given.

Science Standing Committee.—In addition to considering the L.C.C. Regulations for Reinforced Concrete, the Science Standing Committee has been concerned, jointly with the Reinforced Concrete Practice Standing Committee, in the compilation of a Standard Specification for Reinforced Concrete Work which was submitted in draft for discussion at a General Meeting. The Report has yet to be revised in the light of the discussion before it can be resubmitted to the Council for their final approval.

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The Science Standing Committee has the following matters under consideration:—

1. Standardization of joints and connections in reinforced concrete.
2. Amendment of the Standard Specification for cement.
3. Co-ordination of the Standard Specification for structural steel of all kinds.
4. The adhesion of and friction between concrete and steel.
5. Reinforced concrete piles.
6. The effect of sewage upon concrete.
7. The effect of oils and fats on concrete.

Reinforced Concrete Practice Standing Committee.—During the past session the above Committee has met, in conjunction with the other Standing Committees and the Council, to consider the L.C.C. Regulations for Reinforced Concrete.

The Committee has held joint meetings with delegates of the Quantity Surveyors' Association and with members of the Concrete Institute who are Quantity Surveyors by profession. The Joint Committee in the previous session submitted for discussion at a General Meeting a Draft Report on a Standard Method of Measurement for Reinforced Concrete. During the past Session a number of meetings have been held for the purpose of revising this Report, delegates attending from the Royal Institute of British Architects, the Surveyors' Institution, the Institute of Builders, and the National Federation of Building Trades Employers of Great Britain and Ireland. As the outcome a final Report upon the Measurement of Reinforced Concrete in Building Construction was submitted to the Councils of the Concrete Institute and the Quantity Surveyors' Association and adopted by them. It has been arranged to continue the work of the Committee with a view to the formulation of a Report on the Measurement of Reinforced Concrete in Engineering Works as distinct from Building Works. At the same time as the Draft Report above referred to was submitted for discussion, another Draft Report of the Reinforced Concrete Practice Standing Committee alone was put forward. The work of revising this report has now to be undertaken. The final report will contain suggestions as to the manner in which engineers should furnish information to quantity surveyors, the nomenclature to be used, and a tabulated form for preparing quantities for reinforced concrete.

The Committee has also been engaged jointly with the Science Standing Committee in the preparation of the Standard Specification for Reinforced Concrete as recorded above.

The Reinforced Concrete Practice Standing Committ has the following matters under consideration:—

1. Advice to clerks of works, inspectors, and foremen as to methods of properly executing concrete and reinforced concrete work and of preventing defects and failures.
2. Regulations, recommendations of joint committees, and various methods of calculation in respect to the design of reinforced concrete and the like.
3. Forms and centering for reinforced concrete work.
4. Standard concrete mixtures for general purposes.
5. The use of cinder, ash, clinker, and breeze in concrete.
6. Means of keeping reinforcements in place when concreting.
7. Methods of making concrete watertight and of waterproofing concrete.

Tests Standing Committee.—The Tests Standing Committee has held joint meetings with the Council and the other Standing Committees, as previously mentioned.

The Tests Standing Committee has the following matters under consideration:—

1. The effect of the presence of sulphur and its compounds in aggregates.
2. The grading of aggregates.
3. The effect on concrete of physical changes: (1) Effect of temperature; (2) Effect of moisture contents.
4. The effect of the use of sodium silicate on the surface of concrete as affecting reinforcing metal.
5. The erratic results obtained by the Vicat needle in ascertaining the initial setting time of cement.
6. The collection of data regarding the elastic moduli of concrete for stresses within working limits.

Parliamentary Standing Committee. The Parliamentary Standing Committee has held joint meetings with the Council and the other Standing Committees, as previously mentioned.

It has the following matter under consideration:—

The draft of a Bill promoted by the Society of Architects for the registration of architects.

Investigation Committee.—The Investigation Committee has had under consideration reports of failures on reinforced concrete structures, but as the information contributed was confidential, the results of their deliberations cannot be furnished in the form of a Report.

Council.—It was announced that as the result of the annual election of members of Council the following had been elected: Mr. R. H. Harry Stanger, Assoc.M.Inst.C.E., A.M.I.Mech.E., M. Iron and Steel Inst., F.C.S., M.Am.Soc. Testg. Mats.; Mr. D. B. Butler, Assoc.M. Inst.C.E., F.C.S.; Dr. J. S. Owens, B.A., M.D., Assoc.M. Inst.C.E., M.R.San.I., F.R.G.S., F.G.S.; Mr. W. G. Perkins, District Surveyor for Holborn; Mr. Ewart S. Andrews, B.Sc. (Lond.); Mr. J. Ernest Franck, A.R.I.B.A., M.R.San.I.; Mr. Lewis H. Rugg, Assoc.M.Inst.C.E., Past-Chairman J.I.E.; Mr. G. C. Workman, M.S.E.; and Mr. J. S. E. De Vesian, M.Inst.C.E., M.I.Mech.E.

THE VALUE OF OBSERVATION IN WAR.

IT is a significant sign of the times when a lecture with the above title was given last week in the Galleries of the R.I.B.A. at Conduit Street, W. (even though that learned body may have had no formal connection with the meeting), and before a large audience mainly composed of architects. The lecturer was Mr. Fredk. G. Cooke, M.S.A., A.M.I.C.E., of Eastbourne, and his audience were members of the 4th Battalion Central London Regiment.

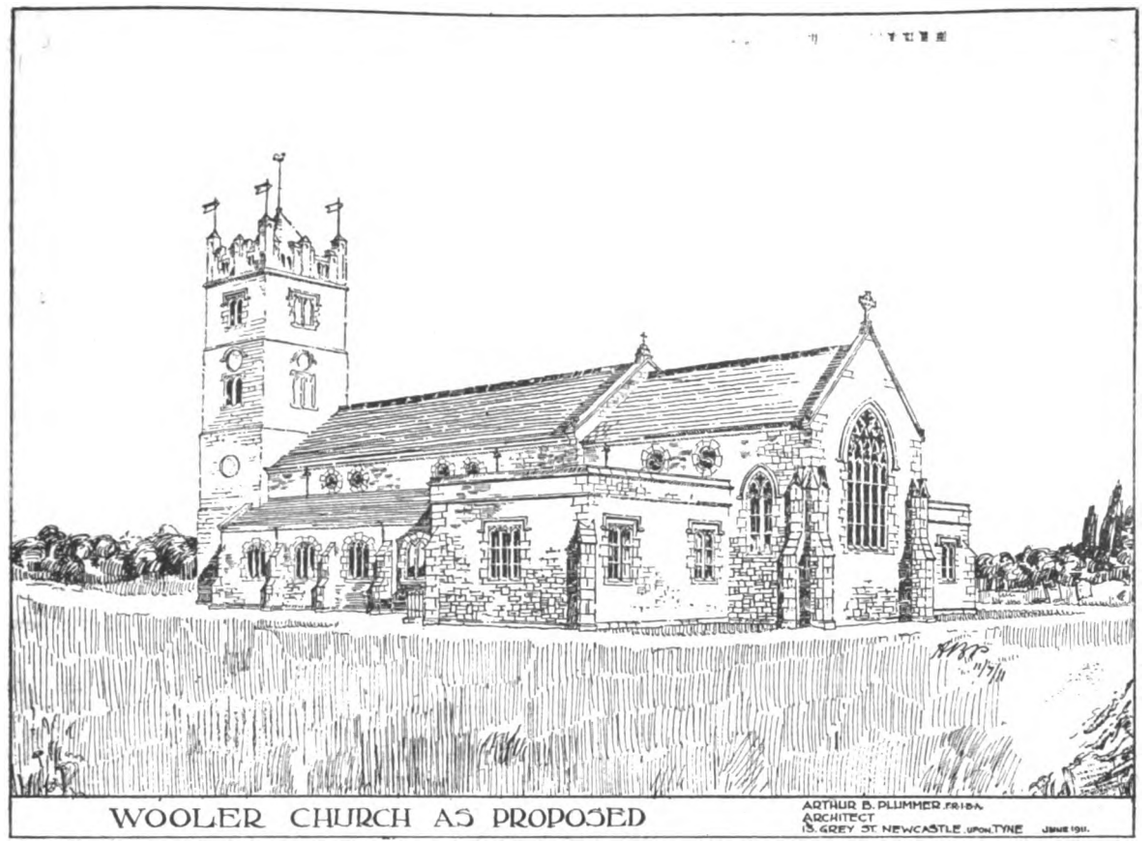
In his introductory remarks Mr. Cooke explained that his lecture had been written for the average soldier, who was of a different type to an architect inasmuch as the latter was a trained observer by profession. For the same reason that gamekeepers and poachers make the best soldiers, architects, who are sportsmen, ought to make absolutely ideal scouts and trained observers. Their knowledge of buildings and enclosures should avail much in street fighting and locating snipers. Architects were, indeed, too good to be massed in one battalion; they should be used to leaven many regiments.

It might be asked what did he (the lecturer) know about the value of observation in war, for he was not even a soldier. Well, he was an old Volunteer and was trained as a civil engineer; he had sapped tunnels deep in the earth, burnt tons of powder, formed scores of miles of trenches, surveyed thousands of acres of land. He had been a devoted wildfowler for forty years. He had shot, fished, and sketched all over Europe from the Tweed to Moscow, and had stalked big and little game in great forests and lonely marshes at all times of the day and night. Further, he had long been a student of military history, though of books on scouting he knew nothing. Therefore he claimed by profession and hobbies to be somewhat of a trained observer.

The greatest of all observers and scouts was David the son of Jesse. When he accepted Goliath's insolent challenge David saw in an instant that the one vital spot in the giant's frame was the forehead, and so before Goliath could lower his helmet the pebble from the brook had done its work. Twice did David pierce at night through the serried ranks of the armed guard surrounding King Saul (his deadly enemy) to his quarters. Surely it was fitting that architects should acclaim David as the man who (through Solomon his son) inspired the building of the Temple at Jerusalem, harbinger of the sacred Gothic fanes—perfect architecture, precious beyond rubies—which in France and Belgium now lie destroyed and desecrated by German hands. There was more true and noble culture in one bruised, broken, sculptured fragment of Rheims than in all the borrowed Gothic architecture in the whole of Germany and Austria. It was up to us to search out and to wreak condign vengeance on some at least of the authors of this unparalleled crime. In the name of all that is lovely and uplifting in humanity and in art, we should strike without pity or mercy.

Those soldiers who got to the Front would have the very finest sport in the world—manhunting. The enemy were armed, equipped, and disciplined like themselves. It was not enough therefore for a British soldier to be simply a good shot, he should be as wary as a hawk and as watchful. His first great duty was to emulate the hawk, that is, to slay and not be slain. Surely that could only be accomplished by becoming a trained scout and brilliant observer.

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WOOLER CHURCH AS PROPOSED

As illustrating the importance of cultivating the habit of observation, Mr. Cooke narrated two or three historical instances. During the Soudan War, for example, a sporting British officer noticed that sand-grouse came to drink every evening at a certain place, always about the same time and from the same direction. One night they failed to come. He considered why, thought it out, doubled his pickets, extended some especially in the direction the birds usually came from, and the result was that a rush of Dervishes was detected and foiled. The best soldier is the one who sees everything around him and remembers what he sees, one who is not simply a shooting machine; he must have initiative, *i.e.*, be instantly ready for correct action in all circumstances by night or day. He must be always making mental notes of his surroundings far and near, and never forget them. The average German is no sportsman, he is merely a well-drilled machine. That is why the British soldier beats him hollow.

It is easy enough to foster the great powers of observation and initiative once a beginning is made, and the habit is persevered in grimly. First of all, the man who wishes so to do must obviously keep his eyes skinned, noticing everything everywhere, largely so that he may know his surroundings at night. When walking, for instance, now in England he should get the lie of the land wherever he goes, noticing all special features—houses, churches, towers, farm buildings, rivers, streams, ponds, hills, valleys, gates, detached trees, woods, stacks, telegraph poles, and anything else which will enable him to know that road and district again—especially by night, for much fighting is done in the dark. Or let him begin by going into a small field and for ten minutes drill into his mind the main features, imagining that a sharpshooter may be hiding somewhere or that it may become necessary to hide from one. The range of observation should be extended by constant practice until it covers quite a large district. Very particular attention should be paid to ditches, streams, or rivers as to their depth, width, and the nature of their bottom. The narrowest points which will afford the easiest crossing should be noted. Or he may practice going out to a fixed point (say farm buildings or a hill half a mile away) by following along hedgerows, fences, banks, or rough ground, so that no one can see him even from an aeroplane. The course should be mapped out with thoughtful precision, everything being noted both in front and behind. It is the little things which count in scouting, such as the behaviour of live stock or wild birds, the discovery of men's tracks, the use of any slight roughness in the ground. When scouting buildings, stacks, &c., the novice should act as though he knew for certain there was a sniper there with a telescopic sight and a pair of glasses ready to fire. Night walking in the open country at home should be practised, for an observant man seldom gets lost.

The habits of instinctive caution and minute observation ingrained in a wildfowler were described as being invaluable to the would-be successful scout. Much can be learnt also from the fly-fisher as to the best mode of procedure in crossing or wading through a river. All this and much else was demonstrated in a telling way by Mr. Cooke, who spoke with all the weight of many years of experience and with much conviction and earnestness. Obviously the same spirit burns in the lecturer as sent his brother at the age of fifty-two, being too old for the English Army, to enlist under the French flag. That brother, an architect also, who now lies in a soldier's grave, "when in the trenches in France on Christmas morning near Peronne had breakfast with a robin, some chaffinches and bullfinches. He loved birds, they found him out even in the firing line. He often heard plover and partridges calling at night."

The lecturer closed with an exhortation to become trained observers and brilliant scouts in order to bear the hostile snipers down, and by taking a long long toll of German officers to avenge our men who have fallen.

THE CHANTREY BEQUEST.

UNDER the heading of "National Art Treasures" we gave last week a short account of the report published by a Committee of Trustees of the National Gallery which inquired into the retention of important pictures in this country and other matters connected with the National Art Collections. In the committee's summary of their recommendations, which we quoted *in extenso*, the present system of conducting the Chantrey Bequest was somewhat severely dealt with. This question they consider to be an urgent one inasmuch as until "the Chantrey problem is grappled with and solved" their larger dream must remain incapable of realisation. Mr. Reginald Blomfield, R.A., writing from the Athenæum Club to the *Morning Post*, criticises the critics in their turn. Mr. Blomfield acted, we believe, on the small committee which purchased out of the funds of the Bequest two oil paintings and one statue from this year's Royal Academy. Before quoting

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Mr. Blomfield's letter it may be well to give the committee's own summary of the situation:—

There are in the Tate Gallery 150 British works of art, which appear there not because they have been selected, bought, or voluntarily accepted by the trustees of the National Gallery, but because they have been purchased by the President and Council of the Royal Academy under the terms of the Chantrey Bequest. Of these 101 are oil paintings, sixteen are water-colours, and twenty-five are sculptures. When the Tate Gallery was founded the Chantrey purchases which had been made prior to that date, and which had hitherto been exhibited in the Victoria and Albert Museum, or been loaned to provincial galleries, were transferred to the Tate, and placed under the custody of the trustees and director of the National Gallery, who yearly since that date have been compelled to accept whatever additions the purchasing authority, in the exercise of its unfettered discretion, has made.

The administration of this trust, and its choice of works of art, and notably of paintings, has for years been the subject of much public criticism, which culminated in the appointment of a Select Committee of the House of Lords, presided over by Lord Crewe, in 1904. The report of this committee, while frankly admitting the deficiencies and imperfections of the existing system, did not proceed beyond the somewhat timid suggestion that the Chantrey purchases, instead of being made by the President and Council of the Royal Academy (a body, for this purpose, of ten Academicians, with the President in the chair), should in future be made by a committee of three specially selected persons. This body, however, has never been called into being, and the only result of the pother raised has been that the Council of the Royal Academy now depute certain of their number to visit other galleries, in order that the reproach of purchase almost exclusively from the works of Royal Academicians may no longer apply.

The President of the Royal Academy, in his evidence before us, expressed himself as satisfied with the general quality of the selection that has been made, which he did not think would have been improved upon under any other system. This view, however, was not shared by others of our witnesses, by whom it was represented that—

(*a*) many of the Chantrey pictures are of inferior merit, and are a discredit to the walls of the gallery;

(*b*) the low standard set by these paintings renders it impossible for the trustees of the National Gallery successfully to invite distinguished British artists to sell their pictures at modest prices for the honour of being represented in the National Collection, as is frequently done in France;

(*c*) a double standard of admission is set up, the trustees sometimes refusing pictures superior in artistic merit to those which are simultaneously purchased under the Chantrey Bequest;

(*d*) while the older British masters with difficulty obtain admission to the National Collection, the younger generation enters with a rush by the Chantrey door;

(*e*) really valuable offers of pictures to the nation are withheld because of the distrust and hostility thereby aroused;

(*f*) a number of the foremost modern British painters, whose works are eagerly bought for Continental galleries, remain entirely unrepresented in the gallery which affects to represent the contemporary art of this country.

We are not called upon to examine these criticisms with any minuteness, but they represent an opinion which we found to be well-nigh unanimously entertained by our witnesses, and they describe a situation which, if it is repugnant to the critics and experts, is certainly not less invidious to the trustees.

When we sought the opinions of our witnesses as to the proper solution, they were not less unanimous in recommending that matters should be brought to a head by a refusal on the part of the trustees any longer to accept pictures in the selection of which they have no voice. If this were done it is probable that the President and Council of the Royal Academy would decline to act, and it would rest with the Government and Parliament to find a solution. We entertain little doubt that only by legislation could the matter be finally or satisfactorily settled.

Such settlement would, it may be presumed, take the form of releasing the income from the Chantrey Trust, and transferring its administration to a reconstituted Board of Trustees for the Tate Gallery (upon which the Royal Academy might, if thought desirable, be represented). It would have the further advantage of being in strict accord with what were undoubtedly the intentions of Sir Francis Chantrey himself. We may point out that no body of persons has greater interest in such a solution than the Government itself. For if by these means an income of £2,000 per annum were placed at the disposal of the trustees as a permanent annual endowment of the National Gallery of Modern British Art, the State would be by so much relieved of the necessity of providing a much larger annual subsidy for this branch of the National Collections, a duty which it will otherwise at no distant date be compelled to perform.

Should such a course be deemed inexpedient, the trustees still have it in their power greatly to alleviate the present situation. Though apparently bound under existing conditions to accept, they are under no obligation to hang the Chantrey purchases, either past or future, as was freely admitted in his evidence by Sir Edward Poynter, President of the Royal Academy, and *ex-officio* chairman of the Purchasing Committee of the Chantrey Bequest. They have it in their power to take down from the walls of the Tate any of the Chantrey purchases which have hitherto hung there, and to refrain from hanging any in the future that may not satisfy their standard. In the event of stronger action not being approved, we recommend that this power be acted upon without hesitation and without delay; it will be rendered all the easier if much greater advantage is taken in the future of the powers of storage and loan possessed by the trustees.

Mr. Reginald Blomfield, in his letter to the *Morning Post*, expresses regret that the committee should have brought forward controversial proposals at a time when there are far more serious matters to consider. His reason for writing is to correct certain misunderstandings, specially as to the Chantrey Bequest, which have arisen out of the report. Mr. Blomfield says:—

"Clauses 21 to 24 deal with the Chantrey Bequest, Clause 22 bluntly proposing 'that legislation be undertaken in order to place the Chantrey Bequest on a sound footing and to vest its administration in the Trustees of the Tate Gallery.' Although the whole clause begs the question, a leading daily paper remarked in support of the proposal that, with one exception, all the witnesses were in favour of it, and that all that the committee did was to act on this expert evidence 'like an honest jury.' With all deference to such high authority, one is bound to consider the constitution of the jury and the value of the expert evidence.

"The committee, it will be noted, propose to transfer the funds of the Chantrey Bequest—funds left in trust to the R.A. by a famous Royal Academician—to the Trustees of the Tate Gallery. It appears that the Trustees of the Tate Gallery are identical with the Trustees of the National Gallery, and the Trustees of the National Gallery are identical with members of the committee who make this proposal—in other words, the committee are proposing to endow themselves with trust funds of the Royal Academy for the supposed benefit of the Tate Gallery—a noble act of vicarious generosity.

"Although the report of the committee appears as a Blue-book 'presented to both Houses by command of his Majesty' and 'printed under the authority of his Majesty's Stationery Office,' in point of fact the committee was not appointed by the Government, but appointed itself and drew up its own terms of reference; nor does it appear how they were empowered to try the case at all, if case there is, or why they should assume that their own judgment is so greatly superior to that of the Royal Academy.

"It appears from the report that the committee took 'evidence both orally and by means of written questions and answers from a number of gentlemen holding prominent positions in the art world,' and the names of these gentlemen are given. It is curious that, with the single exception of Sir Edward Poynter, they do not include a single artist of assured and admitted reputation, but they do include directors of galleries, amateurs, and dealers, and certain gentlemen whose writings are well known for their dislike of the Royal Academy and persistent abuse of everything that it does. Surely among the seventy members of the Royal Academy, some of whom must possess a certain merit, witnesses might have been found who were entitled to be heard in this matter—for the grievance of the committee is a simple one, and it is that they don't like the pictures selected by the President and Council of the Royal Academy, and think they could choose very much better ones themselves.

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"The Trustees of the National Gallery are gentlemen of unblemished reputation and eminent social position, but, when all is said and done, they are only amateurs in art, and it is surely strange that they should prefer their own judgment to that of men who have made painting and sculpture the business of their lives. Nor is the evidence of writers, however brilliant, an adequate foundation for an assault on the trusts of a distinguished body of men, implying, as it does, gross incompetence in the members of that body. The conclusions formulated in Clauses 21 to 24 of the committee's report can in no sense be regarded as final. A committee which permits itself such phrases as 'the incubus of the Chantrey Bequest' is hardly in a judicial frame of mind in regard to the administration of that fund, and, if the time comes when these matters are to be seriously considered, they will have to be dealt with in a very different spirit from that which has inspired Clauses 21 to 24 of the report of the Committee of Trustees of the National Gallery."

BOSWELL'S HOUSE, NOS. 55 AND 56 GREAT QUEEN STREET.

AT a recent meeting of the London County Council the following report by their Local Government, Records, and Museums Committee was adopted:—

We have had under consideration questions relating to the preservation of Nos. 55 and 56 Great Queen Street, known as "Boswell's House," and formerly as "Bristol House," and in view of the correspondence which has taken place in the Press, we deem it desirable to refer to the action taken on behalf of the Council in the matter.

The premises originally formed the western portion of a large mansion built in 1637, the designer being stated to be John Webb, pupil of Inigo Jones, and among the more important persons who resided in the mansion, before or after its division, were John and George Digby, the first and second Earls of Bristol, politicians of the Stuart period; Thomas Fairfax, third Baron Fairfax, commander-in-chief from 1645 to 1650; William Cavendish, third Earl of Devonshire; Robert Spencer, second Earl of Sunderland, Lord President of the Council in the reign of James II.; Henry Howard, seventh Duke of Norfolk; and James Boswell. A complete history of the building is given in Volume V. of the Survey of London (St. Giles-in-the Fields, Part II.), published by the Council.

In the latter part of 1913 our attention was drawn to the impending demolition of the premises in connection with the enlargement of the Freemasons' Hall adjoining, and on February 10, 1914, the Council passed a resolution expressing its regret at the proposal and the opinion that these interesting old seventeenth-century houses should, if possible, be preserved. This resolution was communicated to the United Grand Lodge of England, the freeholders, who intimated that the matter was receiving careful consideration. Subsequently the district surveyor issued a dangerous structure notice relating to the premises, and on October 23, 1914, a further letter was addressed by the Council to the Grand Lodge explaining that this notice did not require the demolition of the building, and that an alternative to pulling down the parts of the premises dealt with in the notice was to repair or otherwise secure them. The hope was also expressed that the alternative method would be adopted. Upon detailed examination, however, it was found that the brickwork and piers supporting the structure were decayed and cracked, that dry rot was prevalent in the timbers of the roof, and that the front wall was out of plumb. The district surveyor was not prepared to approve of the front being incorporated into what would, under the scheme of the Grand Lodge, become a public building. In these circumstances we formed the opinion that, if it should be found impossible to preserve the building, it would be desirable to secure for exhibition in a London museum two bays from the façade and the fine staircase. The Grand Lodge were accordingly asked whether, in the event of the building being demolished, they would present these objects to the Council for the purpose in view and would contribute towards the cost involved, and the Grand Lodge agreed to do so.

In the meantime the question had been taken up by the Society for the Protection of Ancient Buildings and other societies, and the Council was invited to join in a deputation to the Grand Lodge with a view to the preservation of the building. Having regard to the resolution of February 10, 1914, above referred to, we intimated to the first-mentioned society that the Council would be prepared to take part in the proposed deputation, but the Grand Lodge stated that, in all the circumstances, no purpose would be served by their receiving the deputation, and the building has now been demolished.

While we greatly regret that the efforts made to secure the preservation of the building *in situ* have failed, we are of opinion that the offer of the Grand Lodge to present to the Council valuable and interesting objects from the old building and to contribute towards the cost of taking down and removing them should be accepted. The sum paid to the contractors for this work is £45. We propose that the staircase should be exhibited in the Geffrye Museum, and that the portions of the façade should be re-erected in Geffrye's garden on a site shown on the plan (Registered No. 3901), which we have selected for the purpose after consulting with the Parks and Small Holdings and Allotments Committee. The cost of the necessary works is estimated at £143, and we are in communication with the Finance Committee with a view to their sanctioning expenditure of this amount, provision for which has been made in the draft maintenance estimates for 1915-16. We recommend: "That the offer of the United Grand Lodge of England to present to the Council portions of the façade of Nos. 55 and 56 Great Queen Street and the staircase, and to contribute towards the cost of taking down and removing the objects, be accepted."

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

The White Lead Committee's Report and Recommendations.

SIR,—After nearly four years of consideration, the Departmental Committee, which was appointed on January 20, 1911, to consider the use of lead compounds in the painting of buildings, has published its report. The substance of the recommendations is the complete prohibition of white lead in paints, modified only by the allowance of a percentage of the metal, such as some manufacturers of the so-called leadless or zinc oxide paints declare to be necessary for their manufacture.

The moment chosen for the publication of the Committee's report is inopportune, as the whole nation is so preoccupied with the greatest struggle in history for national existence that adequate discussion of the question by the public is next to impossible.

It is unfortunate that English manufacturers of white lead and red lead were not given the opportunity of being represented on the Committee. This omission made it all the more necessary that there should be full publicity, but the Committee decided to hold its sittings in private. There are, of course, precedents for this course, but on the other hand the procedure by Royal Commission would have given that publicity which is so essential. Moreover, the bias of some members of the Committee was evident from the first. The following announcement was made by one of them at a public meeting: "The Committee of Inquiry into the question of lead poisoning (of which he was a member) was going to report in favour of the prohibition of lead in paint altogether" (*Daily Despatch*, October 7, 1912).

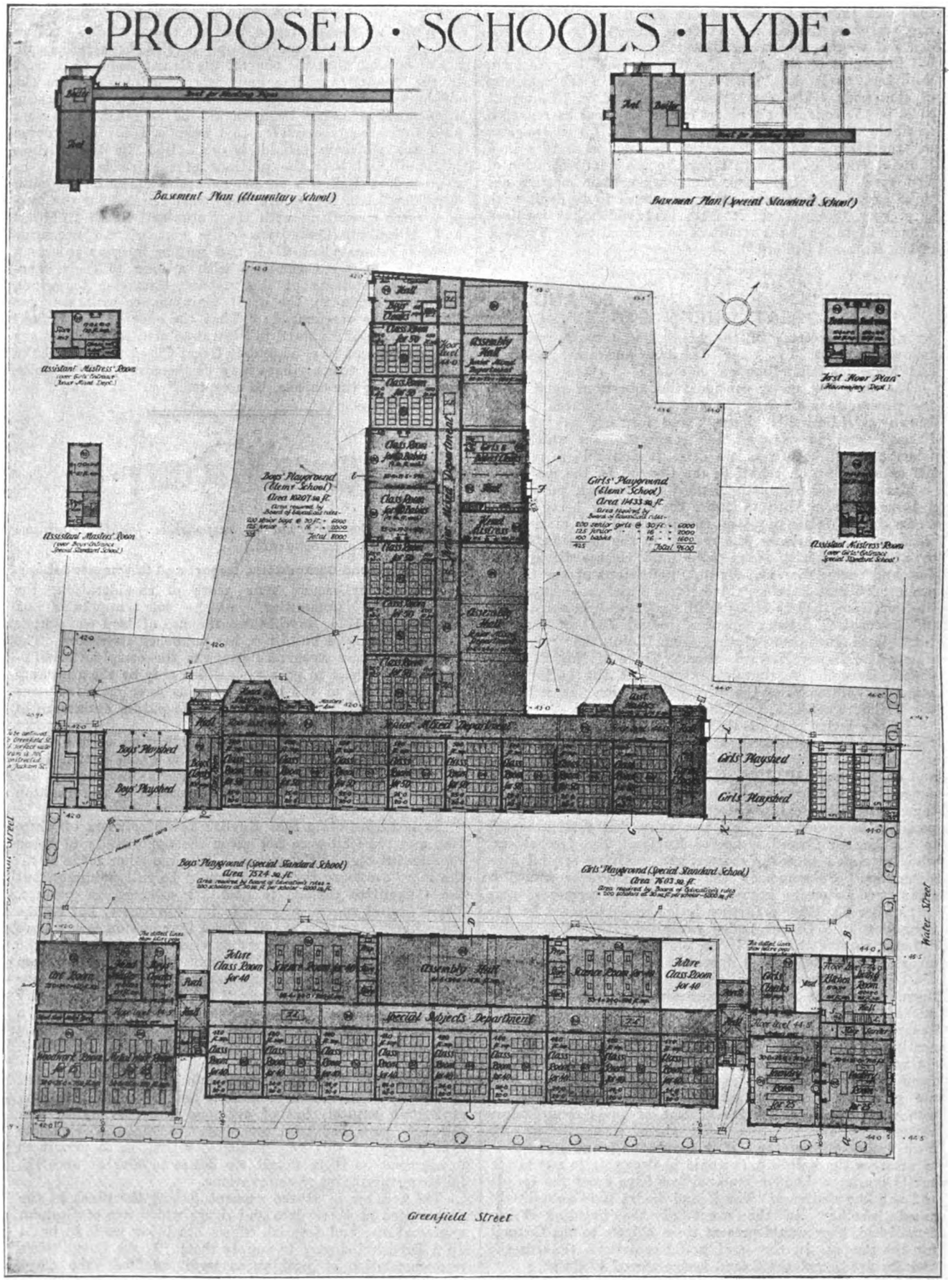
This question, which is a public one, affects the interests not merely of thousands of workers and more than a million of British capital, but of everyone who uses paint, and although time has been too short to make a complete examination of this long-incubated report, or to permit us to comment on it in detail, we desire to offer at once the following preliminary observations.

The country is at the moment feeling the pinch of the deprivation of those dyes and drugs which are of German manufacture; and feverish efforts are being made to build up a British industry to supply them. If the Committee's recommendation of prohibition were adopted, the effect would be to destroy a British industry and to set up in its place a foreign one, over the supplies of which we should have, neither in peace nor war, any control, and which is largely supported by German capital.

When it appeared from such slender information as

(*Continued on page* 431.)

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FIRST PREMIATED DESIGN.—By Mr. F. Quentery Farmer, Architect.

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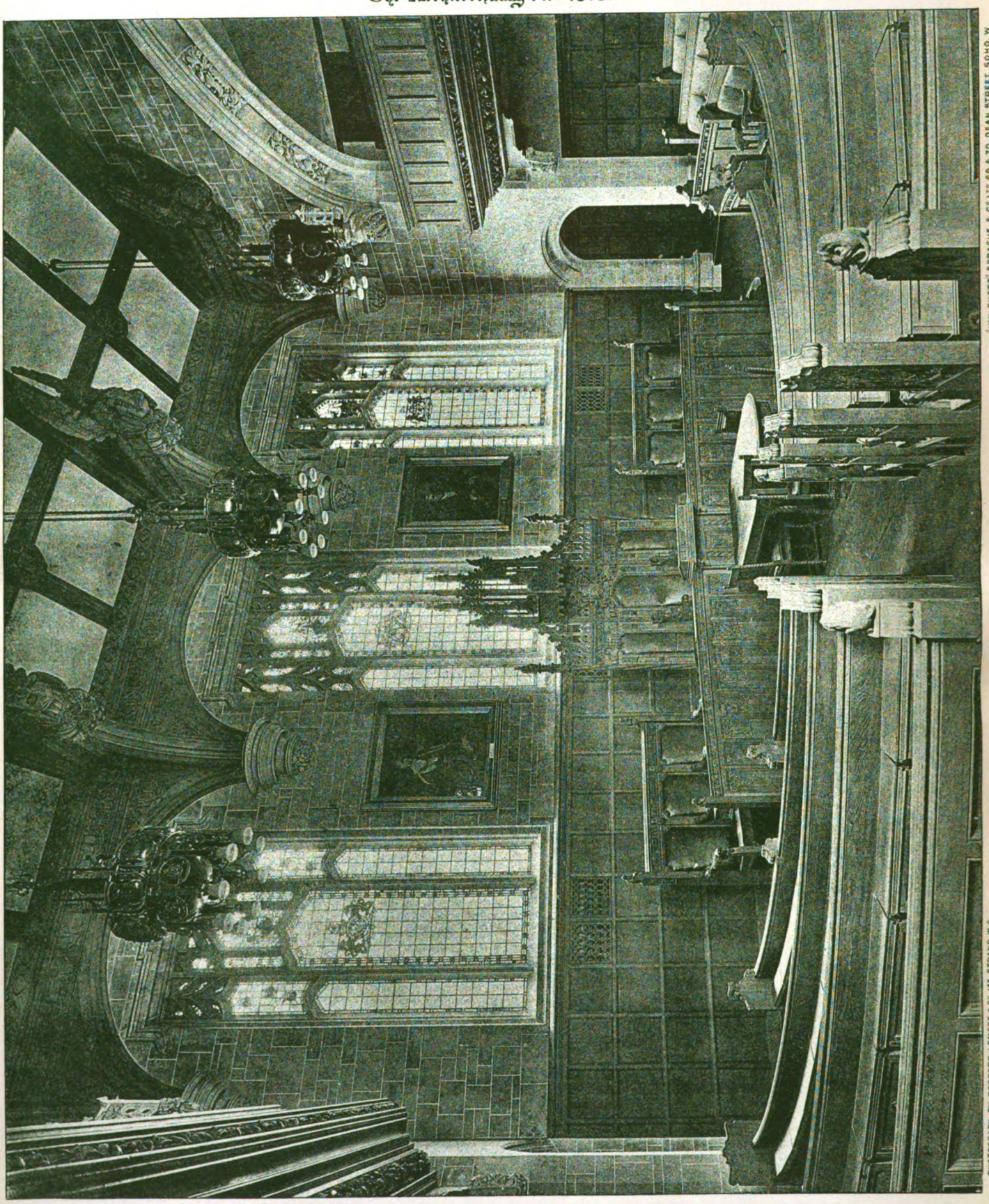
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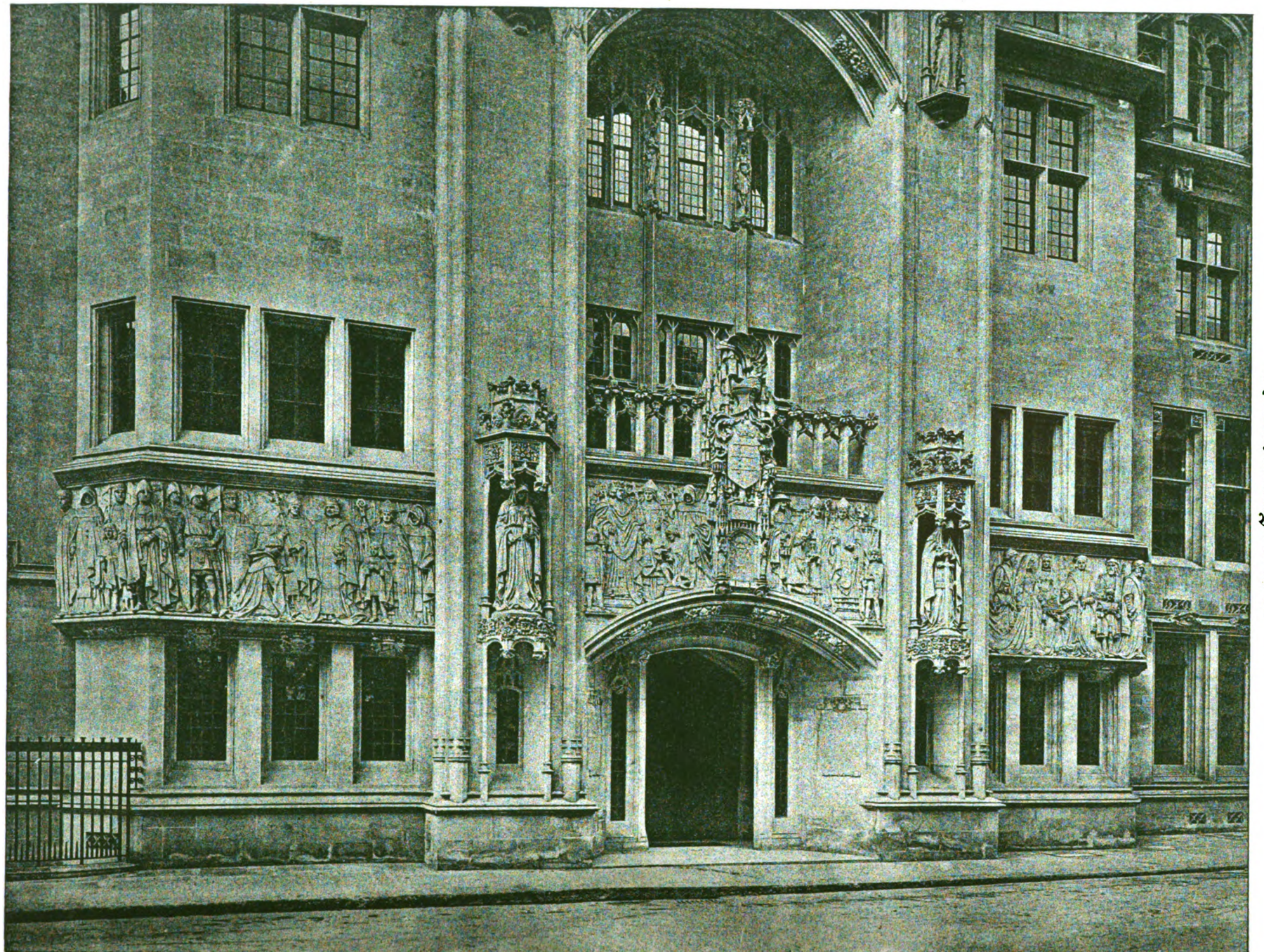
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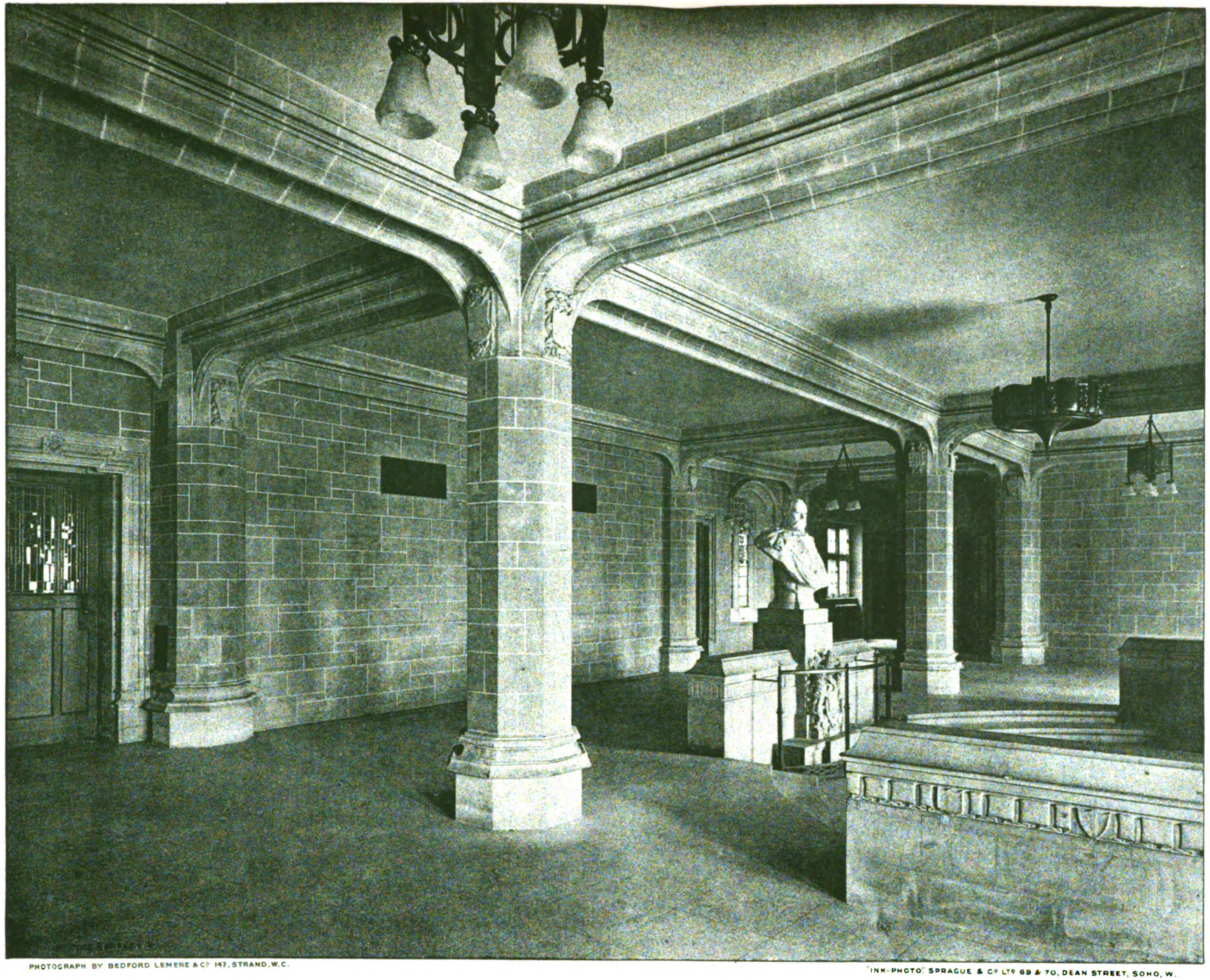
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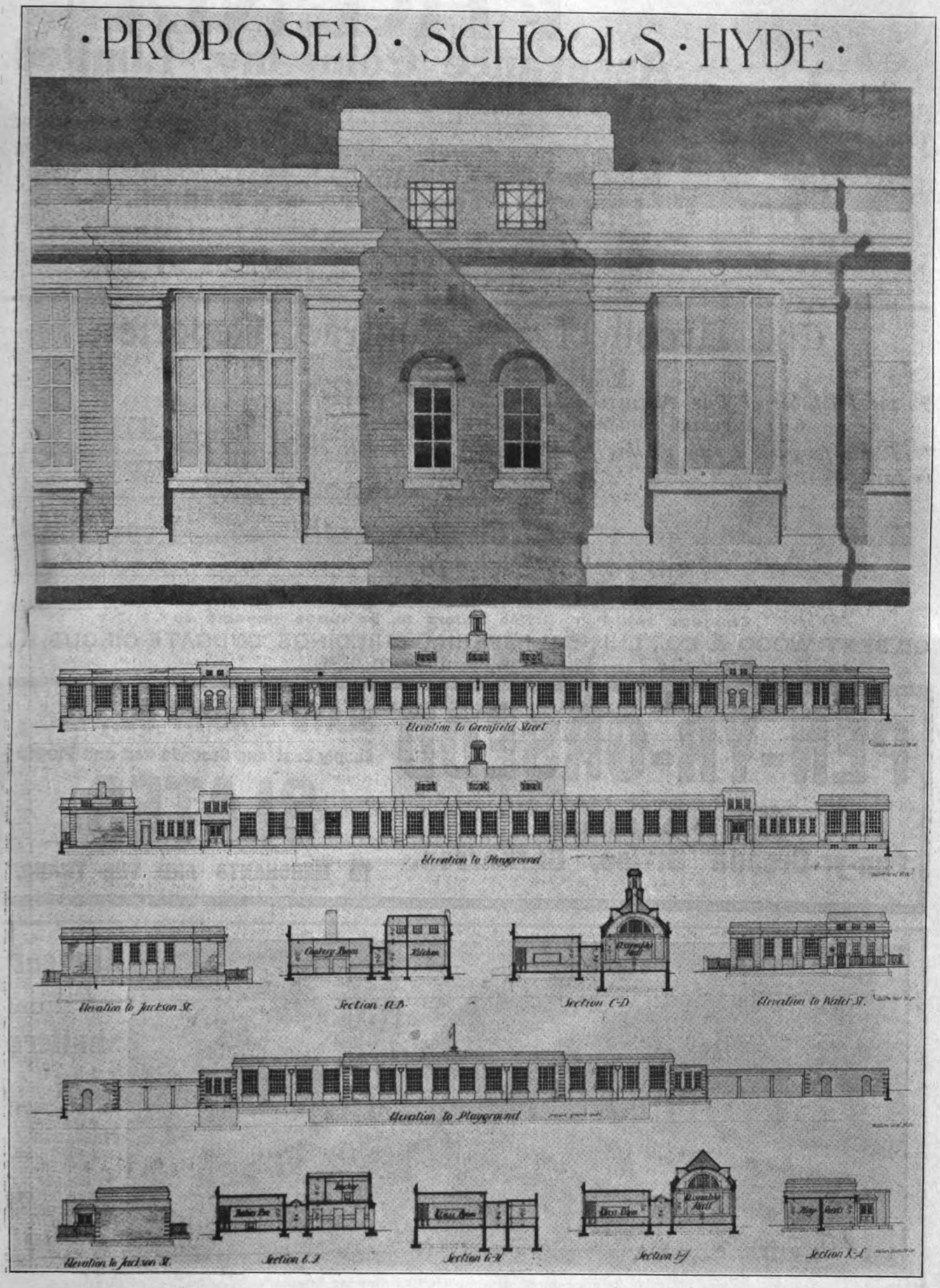
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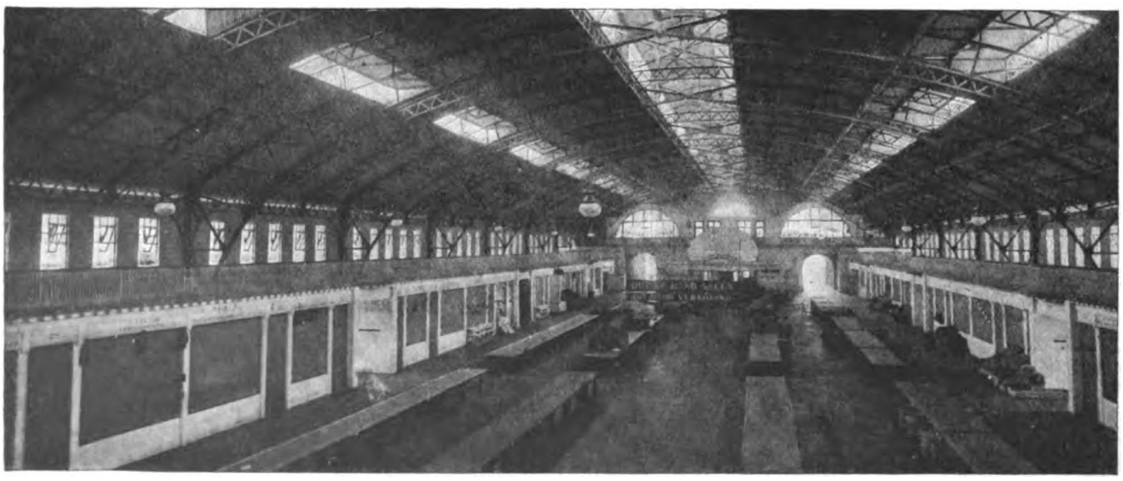
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could be obtained informally that the Committee made no effort to obtain the best scientific evidence and did not propose to avail themselves of the mass of experience and information collected on the subject in nearly all Continental countries, the manufacturers of white lead and red lead decided to tender such evidence at their own expense. Representatives of Continental countries, mostly of official or semi-official position, and in some instances of international reputation, were invited on the initiative of the manufacturers to tender evidence before the Committee. Very little indication of the weight or tendency of their evidence is discoverable in the report, and for an excellent reason. These witnesses have given the explanation, which is that instead of finding themselves before an impartial tribunal, they were treated as hostile witnesses.

The first brief perusal of the report confirms the expectations which one would form of inquiries conducted by such methods, and on such lines as have been indicated. The value of all evidence in favour of regulation as an alternative to prohibition is belittled or swept aside. The advantages are barely considered, and the difficulties are magnified. The conclusion that since regulation is difficult, therefore prohibition is necessary, represents rather a counsel of despair than an attempt to grapple with the problem.

The danger attendant on the use of paints—whether lead or zinc—is due to dust. The dust is produced by the dry rubbing-down process. To avoid the dust is to remove the danger. Continental countries have already appreciated this point and prohibit dry rubbing down. It is on these lines that the problem is to be solved, yet the Departmental Committee have not sufficiently considered the question from this standpoint to solve the problem. At all events, the experiment ought to be tried.

Among the conclusions of the Committee is one that no members of the various employers' associations could refer to any systematic attempt made in the past to discover a satisfactory substitute for lead in the manufacture of paint. We should have thought that the correct conclusion was that in several hundred years every attempt to find a substitute as cheap, as practical, and as useful, has failed.

Although it seems difficult to believe, anyone reading the report is driven to the conclusion that the Departmental Committee has really founded its recommendations upon the evidence of a junior official of the Office of Works. Whatever the views of this witness were worth, it was not proved that the paint used by his Department was, in fact, free from lead. With the aid of a few proprietary paints, the exact constituents of which are unknown, but which appear to have a zinc base fortified by lithopone and barytes and deriving their practical value from their vehicle of boiled oil and varnish, this witness claims to have found a complete substitute for the white and red lead media. The experiments of this official and the results of trials on work which is insignificant compared with the whole volume of painting work done every year in England have appeared to the Committee to justify them in saying that "the experience of the Office of Works is sufficient to warrant a measure of prohibition of white lead. . . ." The "measure of prohibition" as interpreted by the Committee is extinction of the industry.

In view of the constitution of the Committee, the preconceived opinion of some of the members, the manner in which the inquiry was conducted, and the fact that the conclusions were arrived at in the face of substantial evidence, the verdict of the Committee will, we think, not find general acceptance, especially as it is at variance with the opinion of the most experienced technical member of that body, who presents a minority report. It is much more in accordance with the trend of legislation in this country to proceed by way of palliative measures rather than absolute prohibition until that step has been proved to be necessary.

The benefit to be derived from simple regulations is clearly shown by the result of those prescribed under the Factory and Workshops Act in our own businesses. In 1899 the official figures of lead poisoning showed 399 cases in white and red lead manufactories reduced under regulations to thirty-six in 1913. It certainly would seem wiser to introduce effective regulations before taking the drastic step of abolishing a British industry and of placing the painting material trade of this country in the hands of foreign manufacturers.—Yours faithfully,

E. M. JOHNSON.

On behalf of the United Kingdom White Lead Corroders.

Cigarettes for the Front.

SIR,—About 1,000 cigarettes are now required each week by the Active Service Committee of the A.A. for despatch to architects and other friends now fighting in France and the Dardanelles. One friend of the Association has for several months past been sending us 100 cigarettes weekly for this purpose. Will nine others do the same? The brands appreciated most are "Player's Navy Cut" and "Woodbines," and should be sent addressed to the Hon. Secretary of the Active Service Committee, 18 Tufton Street, Westminster, S.W.—Yours faithfully,

MAURICE E. WEBB, President.

University College, London, "Pro Patria."

SIR,—May I ask the hospitality of your columns to bring before the past and present students of University College, London, the following matter?

A new edition of the University College, London, "Pro Patria," is in course of preparation and will be issued shortly. Past and present students, or their relatives and friends on their behalf, are invited to send full particulars of the capacity in which they are serving the country at the present time. In case of the Army, rank and regiment should be given; in the case of the Navy, rank and ship.

These particulars should be addressed to the Publications Secretary, University College, London (Gower Street, W.C.).—I am, Sir, yours faithfully,

May 12, 1915. T. GREGORY FOSTER, Provost.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BERKSHIRE.

Reading.—Theatre. Messrs. Webb & Sutton, R.I.B.A. (of Market Place Chambers), and Mr. S. H. Burdwood, 31 York Place, Portman Square, London, joint architects.

CUMBERLAND.

Heads Nook.—Proposed tuberculosis hospital, Stonebridge Lees.

DERBYSHIRE.

Kilburn.—Proposed public elementary school for 304 places.

DORSET.

Poole.—Proposed children's homes, Stanley Green, for B.G.

DURHAM.

Brandon.—Cowhouse, Bleach Green, for Right Hon. Viscount Boyne.

Haggerleases.—Proposed Council school (£1,100).

Langley Moor.—House, for Messrs. Cochrane & Co.

New Brancepeth.—Council school (£3,300).

West Auckland.—Proposed Council school (£4,650).

ESSEX.

Horsley Cross.—Proposed Council school for ninety places.

HAMPSHIRE.

Aldershot.—Public elementary schools.

Romsey.—Proposed Council school, Winchester Road.

Totton.—Council school.

HERTFORDSHIRE.

Hertford.—Proposed children's home.

KENT.

Bromley.—Mission Hall, Nichol Lane. Mr. W. E. Johnson, architect.

"Sefton," Waldegrave Road: additions. Messrs. Thompson & Walford, F.R.I.B.A., architects, 1 Leadenhall Street, London.

Folkestone.—Premises, for London County and Westminster Bank. Messrs. Bromley & Dahl, A.R.I.B.A., architects, Radnor Chambers.

Herne Bay.—Bungalows, Hampton Pier Avenue. Mr. J. Coulson, architect, 61 Carey Street, Lincoln's Inn, London.

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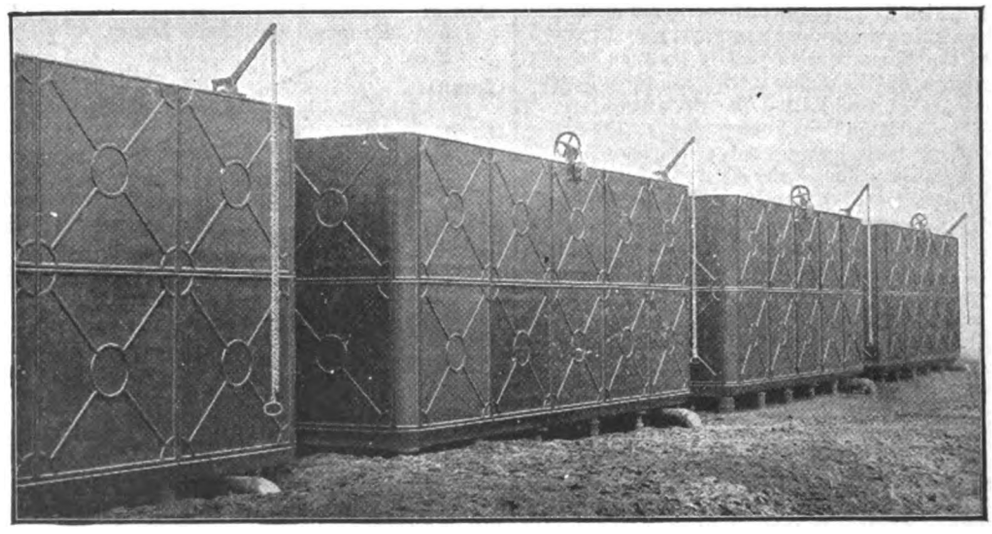
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ENGLAND—*continued.*

LANCASHIRE.

Barrow-in-Furness.—Hostels, for the Barrow Trades Hostels, Ltd. Mr. A. H. Taylor, architect, 35 Powerful Street.

Burnley.—Proposed tuberculosis hospital, Crown Point.

Colne.—Proposed hospital.

Fazakerley.—Smallpox hospital, Sparrow Hall Estate (£24,500).

Leigh.—Shops, Astley Green. Mr. C. Simpson, architect, Bank Chambers, Railway Road.

Rochdale.—Sanatorium for consumptives, Springfield Estate, Marland (£14,000).

Silverdale.—House. Mr. R. B. Barker (of Arnside), architect.

LEICESTERSHIRE.

Snibston.—Church, St. Faith's. Messrs. W. Moss & Son, contractors, Belvoir Road, Coalville.

LINCOLNSHIRE.

Bourne.—Isolation Hospital; pavilion for consumptives.

Lincoln.—Parish Church and Vicarage, Crosby.

Sleaford.—Isolation hospital (£1,000).

MIDDLESEX.

Twickenham.—Sunday schools. Mr. J. N. K. McKilliam, architect, 83 St. Paul's Churchyard, London. Messrs. Eldridge & Son, contractors, St. Margaret's Road (£1,800).

MONMOUTHSHIRE.

Ebbw Vale.—Forty houses, for the Fitzroy Avenue Building Club. Messrs. Vaughan-Richards & Williams, architects, Imperial Chambers.

Llanfoist.—Rectory. Messrs. Bateman (F.R.I.B.A.) & Bateman, architects, 18 Bennett's Hill, Birmingham. Messrs. J. E. Thomas & Sons, contractors, Lion Street, Abergavenny.

NORTHUMBERLAND.

Ashington and Bedlington.—Council schools (£13,800 and £2,500 respectively).

Newcastle-on-Tyne.—Picture theatre. Mr. S. H. Lawson, architect, Emerson Chambers, Blackett Street.

Workmen's dwellings, St. Lawrence and Walker Road districts (£26,800 and £1,800 respectively).

NOTTINGHAMSHIRE.

Nottingham.—Ransom Sanatorium: additions.

Works, London Road: proposed extension, for Messrs. Turney Bros., Ltd.

SHROPSHIRE.

Bishop's Castle.—P.M. Chapel. Mr. J. Brown, architect, Castle Street, Shrewsbury.

STAFFORDSHIRE.

Boney Hay.—House: additions, for Mr. Hickman.

Burntwood.—Stables, &c., Ryecroft, for Mr. Clark.

Cannock Chase.—Military Camp: four cinematograph theatres.

Chase Terrace.—House, Princess Street, for Mr. Hopley.

SURREY.

Kingston-on-Thames.—Proposed public elementary school for 1,000 places.

WARWICKSHIRE.

Coventry.—Licensed premises, corner of Bray's Lane and St. Agatha's Road, for the owners of "The Queen's Arms" p.h., Cross Cheaping.

Licensed premises, corner of Terry and Orwell Roads, for Mr. W. E. Showell (of Erdington). £2,000.

Longford.—Factory, Canal Road, for Mr. W. Stafford.

YORKSHIRE.

Carcroft.—Wesleyan Chapel.

Presbyterian Church.

Cudworth.—Workmen's Club: extensions. Messrs. G. Moxon & Son, architects, 26 Church Street, Barnsley.

Halifax.—Machine works and offices, Mile Cross. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers.

Richmond.—Cinematograph theatre, Queen's Road, for Mr. Hastwell (of Darlington).

Sowerby Bridge.—Clothing factory, Burnley Road, for Messrs. Astin Bros. (of Hebden Bridge).

Stainland.—"The Old Red Lion" Inn, Sowood: additions. Messrs. J. B. Abbey & Son, architects, Market Street, Huddersfield.

Wath.—Joint Hospital: proposed extension (£1,200).

York.—Premises, corner of High Ousegate and Spurriergate: alterations, for Messrs. Simpson.

WALES.

Bangor.—Twenty-four workmen's houses, Sackville Road.

Cardiff.—Gas-lighting Depôt: additions and alterations. City engineer.

Tairgwaith.—School for Glamorgan County Council.

SCOTLAND.

Dumbarton.—Poorhouse: restoration. Messrs. Denny & Blain, architects, British Linen Bank Buildings.

Dundee.—Pumping station, Carolina Port, for the Electricity Committee. Separate trade contractors.

Glasgow.—"Hutted" hospital for 700 beds, for the British Red Cross Society.

Church Hall, Dixon Road, Govan Hill, for the Bridgegate United Free Church.

Mortuary (£500).

Perth.—Proposed County Sanatorium, Hilton Farm.

IRELAND.

Blackrock.—Premises, High Street, for the National Bank, Ltd. (£4,000).

Cork.—Parochial Hall, Passage West.

Mallow.—Fourteen labourers' cottages, for R.D.C.

Newry.—Isolation hospital, Rough Island, Fathom (£500). Mr. C. Blaney, Borough surveyor.

Tulla.—Auxiliary lunatic asylum, for County Clare.

BRITISH INDUSTRIES FAIR.

A LARGE number of invitations have been issued to wholesale buyers by the Board of Trade for the British Industries Fair which opened at the Royal Agricultural Hall on May 10, and during the next few days bona-fide buyers in the trades covered by the Fair should be making preparations to attend.

Invitations to Continental buyers were issued some time ago, and buyers from the Continent, as well as from Canada, America, and other distant countries, signified their intention to visit the Fair.

The trades to which it has been found necessary to restrict the Fair are: china, earthenware and glass, cutlery, electro-plate, printing, stationery, jewellery (including drapers' jewellery and haberdashery), toys and games, and fancy goods, all trades in which a large proportion of the goods hitherto consumed in this country have been imported from abroad.

In estimating the opportunity which buyers have of arranging at the Fair to lay in stock it is to be remembered that, although the exigencies of space have limited the number of exhibiting firms to 600, these are all manufacturers, and they, consequently, represent British industry more thoroughly than would be the case had factors and wholesale dealers been included in the total.

The six hundred exhibitors at the British Industries Fair have only been allotted space by considerably reducing the sites applied for in the majority of cases.

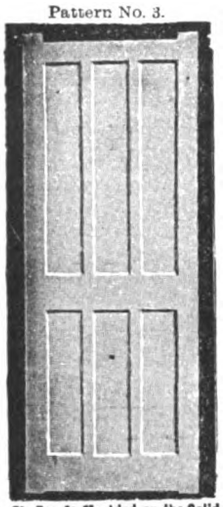
The Board of Trade are endeavouring to assist buyers as far as possible, and interpreters have been engaged, special inquiry offices organised in each of the trade sections, and a branch of the Commercial Intelligence Branch of the Board of Trade established in the hall, so that the fullest information on such matters as commercial statistics, Customs tariffs, shipping and transport, commercial products, and similar matters may be at the disposal of exhibitors and visitors. The Exhibition closes on Friday, May 21.

MR. CHARLES SIMS, R.W.S., A.R.A., whose "Childhood" was bought for the Luxembourg and whose pictures, "The Fountain" and "The Wood Beyond the World," hang in the Tate Gallery, has presented to the Wounded Allies' Relief Committee the gold medal for oil painting awarded to him by the Carnegie Art Institute at the International Exhibition, Pittsburg, U.S.A., in 1912.

A REPRESENTATIVE meeting was held in Newcastle-on-Tyne last week, under the chairmanship of the Lord Mayor, to consider the invitation given last year to the British Association to visit Newcastle in 1916. Principal Hadow said that if the war were not over the business would—as at the Manchester meeting this year—consist entirely of scientific papers and the interchange of scientific thought. One or two gentlemen questioned the advisability of holding the meeting unless the war should be over, but, with two dissentients, the invitation to the Association was reaffirmed and an Executive Committee elected.

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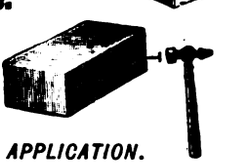
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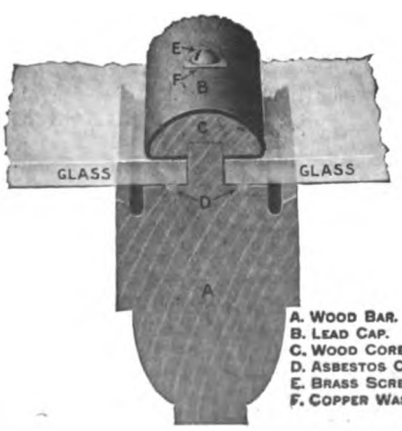
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THE
Architect and Contract Reporter.
FRIDAY, MAY 14, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—The Louth County Council invite architects to submit designs in competition for new county offices, to be erected in Dundalk, and have appointed Professor William A. Scott, A.R.I.B.A., F.R.I.A.I., A.R.H.A., to act as their assessor. Conditions of competition may be obtained from the county secretary on receipt of a deposit of two guineas, which will be returned on receipt of a *bona-fide* design, or the return of the conditions within seven days. Mr. Charles McAlester, county secretary, Courthouse, Dundalk.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

BAGULEY.—May 18.—For additions to laundry, accumulator house, &c., at Baguley Sanatorium, for the Manchester Sanitary Committee. Deposit £1 1*s.* The City Architect, Town Hall, Manchester.

BIRMINGHAM.—May 18.—For the superstructure (steel stanchions, roof trusses, and roof covering) in connection with a new shed at the Telegraph Stores, Birmingham, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Assistant Architect, H.M. Office of Works, 42 Paradise Street, Birmingham, and H.M. Office of Works, &c., Storey's Gate, S.W.

BINGLEY.—For the various trades required in erection of a warehouse at Clyde Street Mills. Mr. F. Atkinson, architect, Penny Bank Chambers, Shipley.

BOURNE (LINCS).—For certain heating, painting, decoration, and other work at the Wesleyan Chapel. Mr. H. T. Ringrose, North Road, Bourne.

BRISTOL.—May 31.—For erection of a labour exchange and probate registry at Colston Avenue, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Assistant Architect, H.M. Office of Works, Small Street, Bristol, and H.M. Office of Works, &c., Storey's Gate, London, S.W.

CAMERTON.—May 18.—For erection of a stable and coach-house adjoining the Camerton Small-pox Hospital, for the Derwent Joint Small-pox Hospital Board. Mr. H. B. Williams, architect to the Board, Town Hall, Workington.

CANNOCK.—May 28.—For the construction of conveniences in Victoria Street, Hednesford; Cannock Road, Chadsmoor; and Hednesford Road, Cannock, with all incidental works, for the Cannock Urban District Council. Mr. R. Blanchard, engineer and surveyor, Council Offices, Cannock, Staffs.

CHORLEY.—May 25.—The Chorley Joint Hospital Board invite separate tenders for alterations at the discharge block, and also for painting, &c., at the Isolation Hospital, Heath Charnock. Mr. R. E. Stanton, clerk, High Street, Chorley.

DARLINGTON.—May 20.—For erection of brick chimney, 128 feet high and 10 feet internal diameter, at the electric power station, Haughton Road, for the Corporation. Deposit £2 2*s.* Mr. G. Winter, Borough surveyor, Town Hall, Darlington.

GRIMSBY.—June 5.—For the alteration of premises, "Rutland House," Deansgate, into Council offices, for the Grimsby Rural District Council. Deposit £2 2*s.* Mr. A. Hobson, engineer and surveyor, West St. Mary's Gate, Grimsby.

HASTINGS.—May 31.—The Corporation invite separate tenders for erecting bandstand and covered shelters on the extended promenade at the Hastings Pier, Hastings. Mr. P. H. Palmer, M.I.C.E., Borough engineer, Town Hall, Hastings.

IRELAND.—May 19.—For additions and alterations to the residence of Count Blake, Cloughballymore House, County Galway. Deposit £1. Mr. B. O'Flynn, B.E., civil engineer and architect, 56 Grand Parade, Cork.

IRELAND.—May 27.—For erection of a lightkeeper's dwelling, engine house, and oil store at Fanad Point (entrance to Lough Swilly), co. Donegal, for the Commissioners of Irish Lights. Deposit £2 2*s.* Mr. H. G. Cook, secretary, Irish Lights Office, Carlisle Buildings, Dublin.

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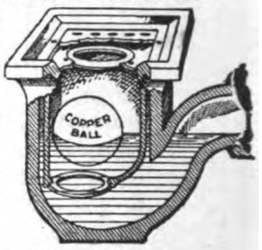
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KNOTTINGLEY.—May 15.—For the various works required in erection and completion of a residence, Ferrybridge Road. Send names by May 15 to Mr. W. J. Tennant, architect and surveyor, Pontefract.

LEEDS.—May 17.—For the construction of three underground transformer chambers in Leeds, for the Corporation. Mr. C. N. Hefford, manager, 1 Whitehall Road, Leeds.

LONDON.—May 19.—For general repairs and painting work at the Bow Relief Offices, 7 Fairfield Road, Bow, E., for the Poplar Board of Guardians. Deposit £1 1s. Messrs. J. & W. Clarkson, 136 High Street, Poplar, E.

ROWSLEY.—May 19.—For erection of an engine shed, &c., for 24 engines at Rowsley, for the Midland Railway. The Engineer's Office, Derby Station.

SCOTLAND.—For erection of about six houses and steadings for small holdings at Wyllieland, near Fenwick and Kilmarnock. Mr. H. M. Conacher, Secretary, Board of Agriculture for Scotland, 29 St. Andrew Square, Edinburgh.

SCOTLAND.—May 20.—For the internal alteration of Kennyhill House, Cumbernauld Road, Dennistoun, to meet the requirements of a special school for invalid children, for the Glasgow School Board. Deposit £1 1s. The School Board Office (Property Department), 129 Bath Street, Glasgow.

SHEFFIELD.—May 28.—(Contract No. 139.) For excavations and concrete work, for the Electric Supply Committee. Deposit £1 1s. Mr. S. E. Feddon, engineer and general manager, Commercial Street, Sheffield.

WALES.—May 19.—For the following works, for the Glamorgan County Council: (1) Additions to the Gwyndy Boys' School at Caerphilly; (2) painting the following schools and houses in the Eastern Division of the county during the Whitsun holidays: Trelewis Infants', Troedrhiwfuwch Infants', Tirphil Girls' and Infants' and cookery room, Nantymoel Girls' and Boys', and Nantymoel Infants' schools, houses at Victoria School, Penarth, and at Tirphil and Brithdir schools. The Glamorgan County Hall, Cardiff.

WALES.—May 22.—For construction of a short length of concrete retaining wall adjoining the Rhymney River at Pwllypant, Caerphilly. Mr. A. O. Harpur, surveyor, Council Offices, Caerphilly.

WALES.—May 24.—For erection of a manse for Berea and Rehoboth Congregational Churches at Square and Compass, Trevine, Letterston. Deposit £1 1s. Mr. J. L. D. Rees, Cerbyd, Solva.

WITHINGTON.—May 19.—For the completion of the nurses' home at the Withington Institution, for the Guardians of Manchester Union. Deposit £1 1s. Mr. F. H. Overmann, F.M.S.A., 49 King Street, Manchester.

TENDERS.

CHELMSFORD.

For the erection of an engine house and incidental works at their Admiral's Park Waterworks, for the Town Council. Mr. P. T. HARRISON, A.M.I.C.E., Borough engineer, Chelmsford.

Moss	£1,583 17 4
French	1,350 15 0
Rayner	1,267 16 9
Potter	1,249 0 0
Bailey	1,244 0 0
J. SMITH & SON, Witham (*accepted*)	1,236 0 0

For private street works at Braemar Avenue, for the Town Council. Mr. P. T. HARRISON, A.M.I.C.E., Borough engineer.

DAVEY & ARMITAGE, Southend-on-Sea (*accepted*)	£652 0 0

For the provision and erection of a pumping installation, complete with all incidental works, at their Admiral's Park Waterworks, for the Town Council. Mr. P. T. HARRISON, A.M.I.C.E., Borough engineer.

Crossley Bros.	£1,944 0 0
Glenfield & Kennedy	1,800 0 0
Campbell Gas Engine Co.	1,725 0 0
Davey, Paxman & Co.	1,687 0 0
R. WARNER & Co., Walton-on-the-Naze (*accepted*)	1,515 0 0

DEWSBURY.

For the erection of storage sheds at Savile Mills, Savile Town. Messrs. C. N. MARRIOTT, SON & SHAW, architects.

Accepted tenders.

Ellis Bros., excavators, &c., Savile Town, Dewsbury.
Samuel Armitage & Sons, carpenters, Bradford Road, Dewsbury.
W. R. Thompson & Co., Ltd., slaters, Railway Street, Dewsbury.
Standard Patent Glazing Co., Ltd., Calder Works, Dewsbury.
F. & T. Mitchell, plumbers, Savile Town, Dewsbury.
Ned Ramsden, painter, Halifax Road, Dewsbury.

HYTHE.

For erecting a timber-framed and corrugated-iron isolation hospital for eight beds, for the Corporation. Mr. C. JONES, Borough surveyor, Hythe.

Saunders & Co	£999 0 0
Palmer & Co.	958 0 0
Scott Bros.	753 0 0
Clayson	687 0 0
Rowell & Co.	685 0 0
R. Barwick	643 13 0
W. J. Carns	605 0 0
J. HARRISON & Co., Camberwell (*accepted*)	536 0 0

LONDON.

For the supply of cables in connection with the extension of the Woolwich tramways sub-station and a temporary supply of power proposed to be obtained for working the Council's tramways.

British Insulated and Helsby Cables, Ltd., Prescot, Lancs	£26,035 16 0
Siemens Bros. & Co.	24,994 2 0
W. T. Henley's Telegraph Works Co.	24,989 15 0
Glover & Co.	24,101 18 8
Johnson & Phillips	23,927 17 8
Callender's Cable and Construction Co.	23,651 1 4
WESTERN ELECTRIC CO., LTD., North Woolwich (*accepted*)	22,971 10 0
Chief Officer of Tramways estimate	21,262 0 0

NOTTINGHAM.

For the erection of huts (War Office plan) at the Bagthorpe Infirmary.

F. Evans, Highbury	£527 10 0

WALES.

For the erection of premises at Ystradgynlais, Brecon, for Mr. E. E. Evans, Oxford House, Ystradgynlais. Mr. D. MORGAN, architect, Brynheulog, Gwaun-cae-Gurwen.

Watkins	£1,215 0 0
Jones	1,200 0 0
David Rees & Sons	1,196 0 0
Morgan	1,190 0 0
S. I. WILLIAMS & Co., Cwmllynfell, Swansea Valley (*accepted*)	950 0 0
W. E. Williams	918 7 9

WEST HAM.

For work required in connection with the alteration and renovation of houses Nos. 346 to 360 Grange Road, for the West Ham Town Council.

A. Webb	£1,760 0 0
A. E. Symes	1,498 0 0
J. T. Luton	1,468 0 0
H. C. Horswill	1,281 10 0
E. Burns & Co. (*recommended*)	1,279 14 4

THE Swansea Builders' Association has decided to give a war bonus of 3s. per week to the hauliers in their employ, commencing from the 7th inst. The allowance is conditional on the hauliers refraining from the habit of riding on their carts.

THE annual report of the London and Lancashire Fire Insurance Company, Ltd., shows a successful year's working. The net realised profit in the fire department was £146,033, in the accident department £80,150, and in the marine department £22,573, an aggregate of £248,756. £180,300 is placed to reserve, which has now reached the handsome total of £3,466,344. The total security to policyholders now amounts to no less than £6,107,594.

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L.C.C. CONTRACTS AND THE LOCAL GOVERNMENT BOARD.

THE General Purposes Committee of the London County Council have had under consideration a circular letter, dated March 11, from the Local Government Board upon the organisation of labour so as to secure the release of competent male labour for enlistment and the production of munitions of war. In the course of it Mr. Monro, the Secretary, says: "At the outset of the war there was reason to fear that unemployment might be widespread. The Government Committee on the Prevention and Relief of Distress suggested to local authorities that they should have in readiness schemes for new works and buildings which could be put into operation in case serious unemployment should arise. Local authorities have in general responded to this suggestion, and in most cases such schemes are ready or in an advanced stage of preparation. Happily, however, after the first few weeks, the trade of the country recovered from its dislocation, and the enlistment of large numbers of men and the execution of war contracts have in most districts converted the problem to be faced from one of unemployment to one of shortage of labour. In these circumstances an opposite policy is indicated, and it becomes necessary to avoid the inception of all new works, except such as are of pressing necessity either for reasons of public health or on account of war requirements."

The L.C.C. General Purposes Committee report as follows on this portion of the document:—

The comptroller attaches most importance to the part of the letter from the Board relating to the restriction of capital expenditure by avoiding the inception of all new works, except such as are of pressing necessity either for reasons of public health or on account of war requirements.

The comptroller points out that apparently the Council will have to consider the question in detail, as affecting—

1. Expenditure incurred—

(*a*) In carrying out existing contracts and in the discharge of liabilities already entered into; and

(*b*) In the completion of works partly carried out, *e.g.*, new County Hall, new lunatic asylums, street improvements, and new Sessions House.

2. New expenditure on the following—

(*a*) Works in fulfilment of statutory obligations, *e.g.*, under Acts relating to mental deficiency, main drainage, elementary education, public health.

(*b*) Small works which would ordinarily be undertaken for the improvement of obligatory services, *e.g.*, minor works at asylums, fire brigade appliances, drainage improvements.

(*c*) Works in completion of schemes approved before the war, but not yet the subject of contracts, *e.g.*, housing of the working classes (part III.), tramways, and works in connection with other optional services.

3. Expenditure of an optional character—

(*a*) All purchases of property for street improvements, parks, or other services to which the Council is not already definitely committed, even although specially favourable opportunities present themselves for effecting such purchases.

(*b*) All new enterprises or proposals connected with services of an optional character.

The course at first followed, soon after the outbreak of the war, was to press on with works in order to prevent distress from unemployment, and the Council gave contractors financial facilities by making more frequent payments than those stipulated by the contracts; but it is, the comptroller points out, obviously not good financial policy to press on with work when prices of labour and materials are both higher, and now that there is a shortage of labour in certain directions and unemployment is extremely low, there seems no reason for doing so, apart from the reasons which presumably are behind the policy now laid down by the Treasury.

Moreover, as the Local Government Board point out, a time of distress and unemployment may arise when the war is over, and it will then be an advantage if local authorities are ready to put out schemes of work and press them forward.

The department perhaps most particularly concerned with the inception of new works is that of the architect, and he informs us that the works referred to him vary considerably in character and magnitude. With regard to the possibility of carrying out works at this juncture, he states that there appears no difficulty in obtaining tenders at a price somewhat higher than that prior to the war, but there is difficulty in the actual execution of the work owing to the shortage in transport, certain kinds of labour, and the supply of such building materials as stone, steel, timber, &c., which depend on transport and haulage.

The programme of work now in the inception stage in the architect's department covers fire brigade stations, tramway buildings, schools and institutes, and working-class dwellings.

Summarised briefly, they fall into the following categories:—

1. In the case of each of three works, the Education Committee have decided to accept a tender, and the Council have approved their action; but in none of these cases has the contract been signed by the successful tenderer or sealed by the Council. Total estimated cost	£20,794
2. In three other cases tenders have been received but have not yet been reported to the Council. Total estimated cost	26,880
3. In 13 other cases the bills of quantities are either prepared or just upon the point of completion, and therefore ready for contract. These works amount to	£209,985
In 12 other cases the working drawings and specifications are nearly completed, but they have not yet been put in the hands of the quantity surveyors. These amount to ...	99,250
Total of 25 works, estimated at ...	£309,235
4. There still remain 102 works in the programme in various stages of preparation, and for which the drawings are now in hand. These amount to	£977,228

The amount estimated as being required in 1915-16 to meet the liability if all these works are progressed under normal conditions is £420,000, but this has been reduced considerably in the draft capital estimates.

There are, moreover, 137 works actually in contractors' hands involving an undischarged liability of £757,000, of which £544,000, according to the time for completion stipulated in the contracts ought to fall within the coming financial year. This is entirely apart from the liability on the new County Hall, which is £386,590 for 1915-16.

The maintenance of the Council's buildings and the repairs, &c., work incidental thereto, apart from certain painting already deleted from the programme, cannot, the architect assumes, be economically postponed, but he understands that the requisitioning officers are to put forward only such repairs as are urgently needed.

Further, the Board's letter states "that the schemes for new works and buildings which have been or are being prepared would then" (after the termination of the war) "be of the greatest value, and undertakings which are now reluctantly postponed, owing to the need of economising both capital and labour, could then be carried into effect with double advantage." This, it is suggested, could be anticipated by not arresting the office work of preparing for contract, and thus enabling the execution to be put in hand at any opportune period that is considered advantageous. The only other expense which would be required is that for the taking out of quantities.

The chief engineer has already reported to the spending committees that some prospective operations could be postponed, and that there are others which cannot possibly be carried out, owing to the disorganised state of the labour market. There are, however, some works which, in his opinion, ought not to be delayed, and he suggests that the spending committees should be asked to specify them.

At the termination of the war it is possible that there will, as is pointed out by the Board, be a great need for employment, and the chief engineer is endeavouring, as far as possible, to expedite the preparation of plans and estimates for such works as were in contemplation before the outbreak of war. The chief engineer suggests that it would be advisable if some kind of definite policy could be laid down as to what class of works should be undertaken and what class should be definitely postponed.

The chief officer of the public control department points out that, following the acquisition by the Corporation of the City of London of the site of the Spitalfields Gas Meter Testing Office in connection with the extension of Spitalfields Market, it will be necessary for a new gas meter testing office to be provided. The obligation to do this is placed upon the City Corporation under the City of London (Various Powers) Act, 1914, but this authority is not taking

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any steps in the matter at the present time. If the City Corporation allows it to remain in abeyance, the chief officer sees no reason why the erection of the new building could not be postponed until after the termination of the war.

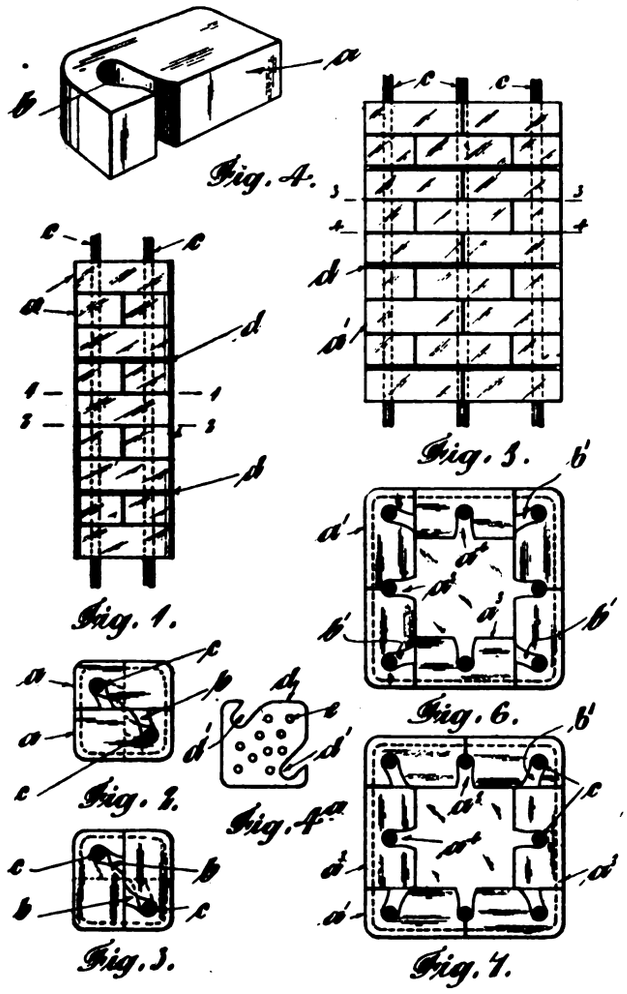
We recommend that committees be instructed to take all possible steps to give effect to the views expressed by the Local Government Board with regard to the necessity for releasing male labour for services connected with the war.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 7,614. March 26, 1914.—Reinforced brickwork columns, piers, and the like. Ben Morton, 78 Quay Street, Deansgate, Manchester.—This invention refers to reinforced brickwork columns, piers, and the like of the kind in which vertical rods or bars pass through the bricks, the bricks having slots from one edge to allow them to be built around the rods or bars. The features of the present invention are (*a*) bricks having one or more specially arranged slots; (*b*) the use of such bricks, in combination with further slotted (or plain) bricks in the construction of columns and piers; and (*c*) the reinforcement of columns, piers, &c., built of the bricks, by sheet metal (steel)



plates engaging the bars and sandwiched at intervals between the courses of bricks. Fig. 1 illustrates a side elevation of a 9-inch column constructed according to the invention. Figs. 2 and 3 illustrate sectional plan views of the same column on lines 1—1 and 2—2 respectively. Fig. 4 illustrates in perspective one of the bricks of the same column. Fig. 4a illustrates a plan on one of the reinforcing steel plates used in the 9-inch column. Fig. 5 illustrates a side elevation of an 18-inch column, while figs. 6 and 7 illustrate sectional plan views of fig. 5 on lines 3—3 and 4—4 respectively. Referring to figs. 1 to 4, a a are the bricks, each formed with a gap or slot b, the slot being near to one end and diagonal to the length of the brick; c c are the vertical reinforcing rods; while d d are the steel plates sandwiched at intervals between the courses of bricks. These plates, which are preferably slightly less than the column, may be provided with holes and be threaded on to the rods c c, or they may (like the bricks) have diagonal gaps or slots d^1, as shown in fig. 4a, by which they may be placed sideways around the rods, instead of threading them over the ends of the rods. In the plates may be holes e through which the mortar may pass and thus help in consolidating the structure. With the bricks a fac-simile of each other and those of one course arranged at right angles to those of the next, and with the column reinforced by the rods c c and plates d d, a very stiff structure is obtained. Referring to figs. 5 to 7, the bricks a^1 of each course are each provided with a diagonal gap or slot b^1 near to one end, and with a half-gap or slot at the other end, the two half-gaps of the two bricks producing a complete gap or slot a^2. The bricks a^3 of each course on the other two sides of the column are plain at each end, and have a central slot a^4. The bricks a^1 of one course lie over the bricks a^3 of the next course above and below. In this construction of column eight rods c c are used. By arranging the slots in the corner bricks diagonally to the length of the brick, any tendency of the rods or corner bricks to alter their position is resisted by the corner brick of the next course of bricks above or (and) below. Further, each corner brick is reversible—that is, it can be used on either of any two adjacent sides of a corner of the column. The space within the column and between the plates d d (see fig. 5) may be filled up with grouting cement in the usual way.—March 31, 1915.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 16,756. Jan. 21, 1914.—G. W. Pepys-Goodchild, Kingscroft, Woodford Green, Essex, and T. P. Macnab, Charnleigh, Purley. Grinding or sand-papering machines.

5,745. March 6, 1914.—Jacob Thomas, Newark, Delaware, U.S.A. Wall-paper trimming machines.

5,949. March 9, 1914.—W. E. Muntz, 6 Bream's Buildings, Chancery Lane, E.C. Taps or valves.

7,461. March 24, 1914.—E. W. Simmons, 63 Sumatra Road, West Hampstead, N.W. Water-heating devices.

8,443. April 3, 1914.—J. C. Lundy, Brantford, Brant, Ontario. Street-sweeping apparatus.

8,604. April 4, 1914.—D.O.T. Soc. Anon. pour l'Exploitation des Brevets Descalles, 103 rue du Saint Esprit, Liege. Padlocks and locks.

8,809. April 7, 1914.—Warren C. Rees, 183 Willow Avenue, West Somerville, Middlesex, Mass., and Stanley Etherington, 10 Revere Street, Winthrop, Suffolk, Mass., U.S.A. Closet seats and seat guards therefor.

9,115. April 9, 1914.—Leo Kamm, 27 Powell Street, Goswell Road, E.C. Liquid level indicators.

9,146. April 11, 1914.—M. P. McLaren, 26 Conway Road, Southgate, N., and J. A. Macintyre, 27 Hindes Road, Harrow. Warming of buildings, steamships, or the like, heating drying rooms, stoves, ovens, or supplying hot water to baths, kitchens, or similar places.

9,209. April 14, 1914.—Chas. Boast, 32 Belmont Road, Uxbridge. Combined washing copper and hot-water heaters.

9,281. April 14, 1914.—M. A. Popkess, 30 Church Street, N.Y., U.S.A. Apparatus for heating, drying, and pulverising earthy materials.

9,659. April 18, 1914.—R. J. Eskrigge, "Wavecrest," New Brighton, Cheshire. Electric light shade, carrier or holder.

12,460. May 20, 1914.—Dated under International Convention May 22, 1913. J. H. Welsenaar, architect, Koninginneweg 40, Haarlem, Holland. Catches for locks or latches.

14,503. June 17, 1914.—Percy Weston, 68 Osborne Road, Sheffield. Roof gutters for buildings and like structures.

14,615. June 18, 1914.—John Bromet, Golf Links Farm, Tadcaster, York, Frank Thorman, Lucerne Farm, Newton Kyme, near Tadcaster, York, and H. C. Wood, 5 Bromfield Terrace, Tadcaster, York. Apparatus for drying sewage sludge and the like.

15,953. July 3, 1914.—Valdemar Soe-Jensen, 12 Hessensgade, Copenhagen. Device for securing pipes and the like to walls or other structures.

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17,188. July 20, 1914.—Dated under International Convention Jan. 22, 1914. W. R. Brennan, 42 Riversdale Road, Hawthorn, near Melbourne, Australia. Locks for doors.

19,916. April 11, 1914.—Walter Jones, J.P., and Jones & Attwood, Ltd., Titan Works, Amblecote, Stourbridge. Apparatus for the purification of sewage and analogous liquids.

20,814. Oct. 10, 1914.—W. W. Nobbs, 71 Haverstock Hill, N.W. Ventilators.

1,239. Jan. 26, 1915. Rev. Frank Iliff, St. Peter's Rectory, Levenshulme, Manchester. Cowls for chimneys, stove pipes, ventilating shafts, and the like.

1,377 of 1915, dated April 14, 1914.—I. T. Negus and Louise Negus, 3 Avenue Mansions, Eastbourne. Electric cooking ovens.

22,373. Nov. 11, 1914.—Nils Fredriksson. Svedale, Sweden. Apparatus for cutting bricks or the like from a continuously fed bar of material.

15,855. July 2, 1914.—A. M. Chambers, Rose Cottage, Church Norton, Selsey. Means for preventing down draught in open fireplaces.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

A SCHEME for the erection of thirty-eight working-class houses in St. Augustine Road, Chesterfield, is to be prepared by the assistant borough surveyor. The cost is not to exceed £185 per house.

THE West Sussex County Council have decided that the Norfolk Suspension Bridge, which carries the main road from Brighton to Worthing over the river Adur at Shoreham, ought to be rebuilt, at an estimated cost of £17,000. Mr. Howard Humphries is acting as advisory engineer.

THE Cambrian Archæological Association have postponed, on account of the war, the annual meeting, which was to be held at Dolgelley in August. Last year, after all the arrangements for the Dolgelley meeting had been completed, they were cancelled owing to the outbreak of war.

WE regret to announce the death of Mr. Robert John Stirling, B.E., F.R.I.A.I., which occurred at his residence, 45 Pembroke Road, Dublin, on Monday, the 10th inst. Mr. Stirling, who was in his 74th year, was probably one of the best-known architects in Ireland. Only a short time ago he retired from active business.

AT the last meeting of the Barnsley Town Council a scheme was adopted for extensions at the electricity works at an estimated cost of £21,850. Alderman Rose (Chairman of the Electricity Committee) said the scheme was urgently necessary. The scheme would not cost the ratepayers a penny.

MESSRS. CHARLES SMITH & SON, architects, of Reading, have been instructed by the Reading Town Council to proceed with the preparation of detailed plans for their proposed pavilion for advanced cases of tuberculosis. The working drawings have already been approved by the Local Government Board.

MEMBERS of Northampton Building Trades Workers' Federation last week decided by a majority of three to one to strike. They have asked for an increase of one penny per hour and a revision of rules. The Masters' Association contend that the six months' notice given by the men is illegal. About 1,000 men are affected.

THE Local Government Board have intimated their refusal to sanction a loan of £30,000 which the Burton Corporation wish to raise for carrying out the duplication of the rising sewerage main. The Corporation regard their scheme as absolutely imperative if a repetition of the bursting of the rising main and consequent liability for legal proceedings are to be avoided. Tenders for the supply of pipes have been accepted provisionally, and the first instalment of the anticipated loan was included in the estimates for the current year.

THE Council of the Royal Institute of Architects in Ireland held a meeting in Dublin on Monday last. The President, Mr. R. Caulfeild Orpen, B.A., F.R.I.A.I., occupied the chair. The reply from the Lord Lieutenant to the address presented by the Council on the 26th ult. was read. The announcement of His Excellency consenting to become a Vice-Patron of the Institute was received with applause. The report of the Professional Practice Committee affecting building contracts arising out of the war was dealt with. The following members were recently raised to the rank of Fellowship:—Messrs. Frederick Hayes, George F. Beckett, and W. Sampson Jervois. Mr. H. J. Lundy was elected a member, and Professor William H. Goodyear, of New York, was elected an honorary and corresponding member.

THE net expenditure which the London County Council has to incur in connection with the enforcement of the provisions of the London Building Act (Amendment) Act, 1905, and the Factory and Workshop Acts, 1901 and 1907, with regard to the provision of means of escape from fire, is estimated for 1915-16 at £1,105 less than for 1914-15. The decrease is in respect of staff. A provisional sum of £500 has been included in the estimates of the Building Acts Committee in respect of contingent expenditure which may arise in connection with Part II. (Town Planning) of the Housing, Town Planning, &c., Act, 1909. Similar provision was made in the estimates for 1914-15, but no expenditure was incurred. The net expenses of carrying out Part IX. of the London Building Act, 1894, relating to dangerous and neglected structures, are estimated at £1,465, as against £1,755 for 1914-15.

THE death took place under tragic circumstances at the Royal Salop Infirmary, Shrewsbury, on Saturday, of Alderman W. H. Spaull, J.P., F.R.I.B.A., ex-Mayor of Oswestry, and one of the most prominent Freemasons in the country. Alderman Spaull was crossing the street near the Shrewsbury Post Office on Saturday morning, when he was struck by the shaft of a passing trap and knocked down. His head struck the kerbing and he was rendered unconscious. He died in the infirmary about four hours later without having regained consciousness. Alderman W. H. Spaull had a notable career. As a young man he started practice in Oswestry as an architect, and later he entered the Town Council, and in April 1879 was made a Justice of the Peace. For many years he acted as surveyor for the Diocese of St. Asaph, and in this connection he designed many churches and chapels in the diocese. In Masonry he was Provincial Grand Secretary for Shropshire, Director of Ceremonies of the Grand Lodge of England, and celebrated his Masonic jubilee only the previous week.

AT the monthly meeting of Clydebank Town Council a minute of the Streets and Buildings Committee was submitted stating that the Committee had taken into consideration the correspondence with the Local Government Board the Council's application for authority to borrow for the purchase of twelve acres of land and for the erection of workmen's dwellings thereon. The Clerk was instructed to reply that additional housing accommodation was urgently required, as houses could not be obtained to meet the present demand; that private enterprise was doing little to meet the demand; that overcrowding was very prevalent in the burgh, and that many unoccupied shops had been converted into dwelling-houses which were not suitable for such a purpose, but in the present crisis such matters had to be overlooked. The plans of the proposed buildings were considered and approved, and the Master of Works was instructed to complete and issue the specifications to the contractors and to procure offers. The minute was adopted.

THE Middlesex Guildhall, Westminster, to which we devote all our loose plate illustrations this week, is particularly interesting in respect of its ornamental details. These have obviously been thought out with the greatest care, and their execution evinces a high degree of craftsmanship. For select examples we may mention the exterior carving by Mr. H. C. Fehr (of Chelsea), and the beautiful stained-glass, leaded lights, and glazing throughout the building by Messrs. Abbott & Co., of Lancaster. The decorative glazing is worthy of close attention as a lesson in how to produce a telling effect with a rigid economy of figure work, and without interference with the illumination. The Council Chamber (which includes much excellent carving by Messrs. Wylie & Lochhead, Ltd., of London and Glasgow), has in its windows the most colour, which is emphasised by the greatly preponderating mass of white glass. Heraldic devices are freely employed throughout the building and impart just the right air to a structure of this character. Messrs. Abbott & Co.'s contribution to the success of the tout ensemble is no small one. The fire-protective arrangements are very complete, and have been provided by Messrs. Merryweather & Sons, Greenwich Road, London. Fire mains are carried through the building, with a full complement of hydrants on each floor. There are twenty-two hydrants in all, of the "Metropole" pattern, each equipped with 100 feet of canvas hose, branch-pipe, nozzle, and spanner, carried on a polished teak wall board.

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THE ARCHITECT

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ARCHITECTURE AT THE ROYAL ACADEMY.—II.

IN the group of ecclesiastical architecture the place of honour is allotted to Mr. G. Gilbert Scott's "New Catholic Church, Northfleet"; not a large building, but to which a fine sense of scale has been given by admirable proportion of parts and great dignity by the restrained simplicity and originality of form of the upstanding western tower. The design is modern, personal, and intensely satisfying, and the place of honour allotted to it is well deserved.

Several cathedrals from overseas are represented. Mr. Cecil G. Hare has had a fine opportunity in the new cathedral for San Francisco, U.S.A., and has made good use of that opportunity. The exterior shows a view from the west, which has two towers with side entrances and exhibits admirable grouping built up in many planes, both horizontal and vertical. There is in the design a sense of modernity in that, whilst mediæval motifs are employed in the detail, no one with any knowledge of architectural history would hesitate in realising that here is a building which could not have been erected before the twentieth century. In this we have an excellent example of the futility of attempting to attain originality by eccentricity in detail. The interior view shows a grand feeling of stateliness in the lofty proportions of the nave arcade, and reveals the interesting adoption of an octagonal central area after the manner of Ely. The cathedral character is enhanced by a close stone screen, on which is a small organ case insufficient to block the vista to the east end. Altogether Mr. Hare has produced a design which is worthy of a high place in modern English ecclesiastical architecture.

Mr. G. H. Fellowes Prynne exhibits by exterior and interior views his design for the new cathedral at Colombo, into which he has evidently striven consciously and not unsuccessfully to infuse a suitable tonality for the location. The design, in short, is not an English cathedral dumped down upon a foreign shore, but a design by an Englishman intentionally adapted for the spicy breezes of Ceylon's isle. Like most of Mr. Prynne's churches, this cathedral has an interesting plan; a wide nave, with processional aisles, beyond the external walls of which are outside cloisters and verandahs continued across the west front as an external narthex. The transepts form two chapels, each with an apse on the eastern face, parallel in axis with the main apse at the east end of the cathedral. From the exterior view we learn that there is a single western tower and a central dome. The tower echoes in its culmination the central feature, for it supports a detached domed turret, the tower angles having independent lesser turrets to form a group. This treatment of skyline at once gives a distinct flavour to the design, which is intensified by the striation of the wall surfaces in red—brick or stone—and white. Copper roofs to the domes, which have already—in the water-colour draughtsman's hands—turned green, and red tile roofs complete the colour scheme. Internally, we find that Mr. Prynne has followed the German Romanesque plan of grouping two bays of the nave arcade in one square compartment of the vault, which is coloured in blue with pendentives adorned with angel groups on a gold ground, presumably in mosaic. The main arches have alternate voussoirs in warm cream and green; the inner arches are of cream-coloured stone, which also runs in bands through the white plastered walls. Altogether it will be gathered that the architect has by a fusion of Gothic and Romanesque motifs avoided anything like a quite English cathedral.

The remaining cathedrals whose designs are to be seen at the Royal Academy are all likewise for tropical climes. Mr. Leonard Stokes shows us the "New Cathedral (R.C.), Georgetown, Demerara," by perspectives of the exterior and interior. Here there is no attempt at polychromy. The exterior as depicted is white, the interior a cool grey. Neither is there any abnormality of detail. The design is a typical Stokes expression, with square topped buttresses and shallow weatherings, a central tower and spire, traceried windows, deeply recessed, and for the sake of the worshippers closed in their lower parts with louvred shutters. In the interior a segmental barrel ceiling strikes a non-Gothic note, whilst a built chancel screen introduces a dash of colour in its decoration.

The west front and tower of Khartoum Cathedral are shown in a perspective by Mr. Robert S. Weir, who will be better remembered under his pre-war name of R. Weir Schultz. The church has nave and chancel with processional aisles and transepts of moderate projection, and, although a cathedral, in fact is no larger apparently than a medium-sized parish church. The tower is a separate feature to the south-west, though linked to the church by a modest covered way. The external treatment is a curious version of Gothicised Romanesque, in which one must assume that the architect has felt himself limited by the possibilities of native craftsmanship.

Nairobi Cathedral, by Mr. Temple Moore, of which an exterior view is shown, is unmistakably Early English. The grouping depends largely upon twin transeptal towers with saddle-back tiled roofs behind battlemented and machicolated parapets. The design is virile and quaint, with little to suggest a tropical clime beyond the small size of most of the windows and their shading by strongly projecting eaves, or, in some instances, specially introduced pent roofs. Mr. Temple Moore exhibits also the interior of a new church at Gillingham, Kent, which, apparently, consists of a nave and wide aisle, or aisles under a single roof, the nave arcade being lofty and wide without clerestory, and structurally fulfilling the purpose only of a trussed purlin. The nave has a barrel ceiling, and the aisle a straight slope. The chancel is treated to a clerestory over the arcade to the organ chamber and vestries. The drawing indicates an attempt to give adequate architectural character to a cheap church.

An addition or step towards completion of a cathedral is seen in Mr. Robert S. Weir's "St. Andrew's Chapel, Westminster Cathedral," of which geometrical plan and east and west elevations are exhibited. This work naturally partakes of a Byzantine character, and has a high panelled dado in dove, red and green marble with white bands, and above mosaic pictures on a gold ground. The effect may be expected to be rich and yet far from garish.

The English Church, Cap d'Antibes, by Mr. Frank L. Pearson, is another example of English work abroad. It is a small cruciform church with a low central tower, a western entrance, and an apse at the east end. Mr.

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Philip J. Marvin now has hung the interior of his design for a church in Malta, of which the exterior was exhibited last year, and which has been illustrated in *The Architect*. Based on Romanesque lines, the interior shows big circular piers, part of which is engaged by flat-soffited arches on corbelled caps, and part runs up to the transverse arches of domed compartments—a dignified and effective conception.

NOTES AND COMMENTS.

THE extent to which pre-war contracts are affected by the present conditions is obviously of considerable importance to traders, and the decision by Mr. Justice Rowlatt in the action of the Associated Portland Cement Manufacturers against William Cory & Sons, Ltd., appears to take a thoroughly common-sense view of the subject. The particular contract in question related to the freightage of cement to Rosyth. In March 1910 the defendants entered into a contract lasting till 1916 to provide the plaintiffs with tonnage for carriage of cement from the Thames to Rosyth. Plaintiffs were under contract to supply cement to Messrs. Easton Gibb & Co., the contractors to the Government of works at the Rosyth Naval Base.

When the war broke out the defendants questioned whether they were relieved from their obligations, and a temporary arrangement was come to by which the plaintiffs agreed to pay 6*d*. per ton extra. Freights rose, and in December defendants said they would not continue unless they received another 2*s*. a ton. Plaintiffs said they had the right to have their cement carried at the contract rate of 2*s*. 2*d*. per ton. Defendants set up that they considered that the contract was cancelled by the war, and demanded the market rate of freight. This was paid by the plaintiffs, and they now claimed payment of the difference as damages for breach of contract.

Defendants pleaded that the contract was entered into in contemplation of peace conditions, and they set up the provisions of the Defence of the Realm Act, which gave the Government power to take any ships which they required for war.

His Lordship, in giving judgment, said it was apparent that there was danger attending these voyages. They all knew the very great dangers involved in traversing the seas adjacent to the East Coast, and in consequence wages went up. The question he had to consider was whether the defendants were entitled to claim that the contract as a whole was suspended owing to new conditions brought about by the war. With regard to the clause of the contract relieving the defendants of their obligation in the event of "restraints of princes and rulers," he would point out that while the defendants had been hampered by the outbreak of war the Government had not done anything to stop all the voyages by the defendants' ships.

The requisitioning of a number of ships to perform the voyages did not entitle the defendants to say that they had been prevented from performing their contract by the Defence of the Realm Act, and afforded no justification for the course the defendants had taken, as it was impossible for them to contend that the restrictions imposed by the Government prevented them from fulfilling the whole of their contract.

Under these circumstances he gave judgment for plaintiffs, and the amount claimed, with costs.

In *The Architect* of March 12 reference was made to the Special Committee recently appointed by the Manchester City Council to "inquire exhaustively into the present methods adopted in connection with civic architectural matters, with a view to their possible improvement in efficiency and economy." The further purpose of the Committee is to advise the Council with regard to the advantage of inviting firms of architects in private practice to design buildings, thereby enabling the city architect to devote himself more particularly to advisory and supervisory work in connection with the plans that come before the Corporation.

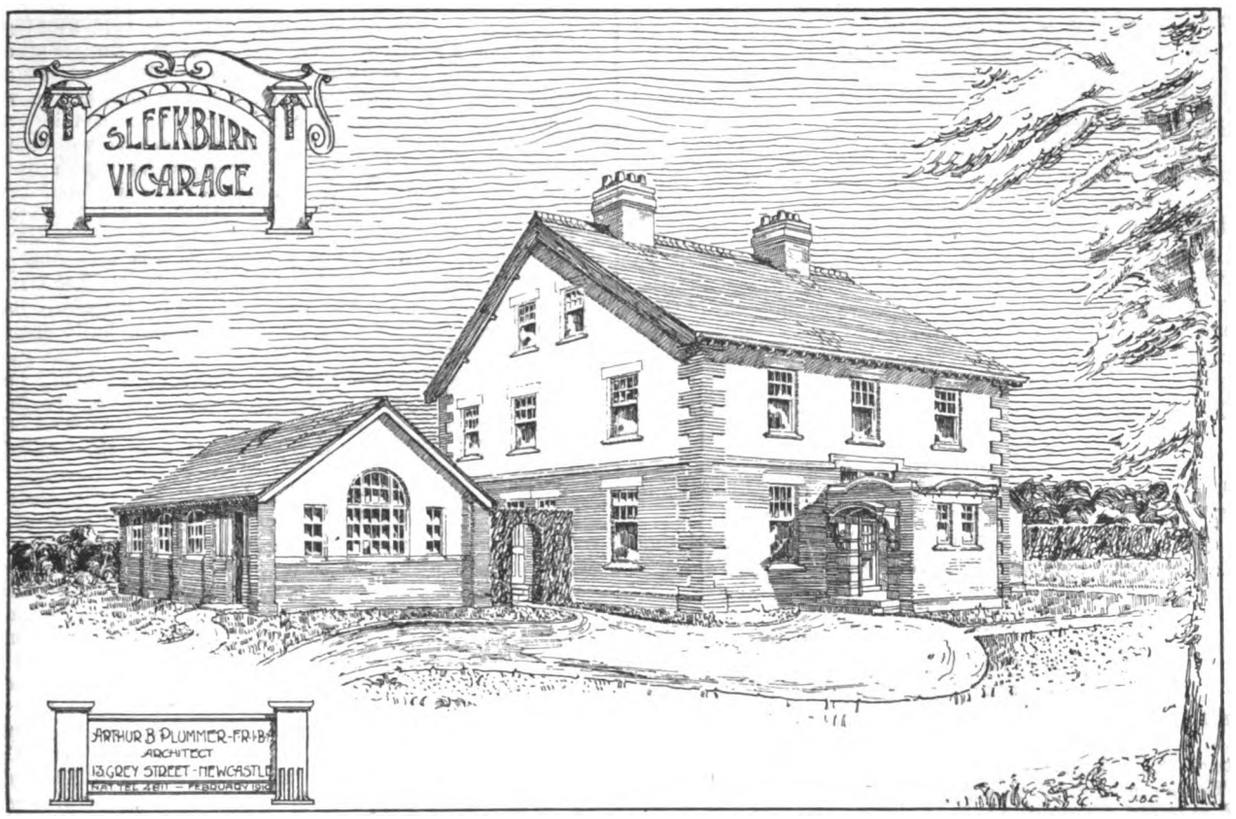
The Committee decided to invite the Manchester Society of Architects to send a deputation on June 16 and lay the Society's views on the subject before the Committee. All the departments of the Corporation which have to do with building operations are to be asked to lay their views on the subject before the Committee.

The proceedings of the Trustees of the Chantrey Bequest have not infrequently been subjected to adverse criticism on the ground of the low standard of true artistic merit of some of the works purchased. The rightness or otherwise of such criticism rests on the view-point of the Chantrey Bequest: whether the works purchased should be chosen solely for the sake of art, or whether the pleasure of the public, educated or uneducated in artistic matters, should be considered. In its concluding notice the *Morning Post* thus very fairly states the case for the Trustees:

"In the *Morning Post* last Wednesday (May 12) Sir Martin Conway made a somewhat dangerous statement—a statement which seems to contain a complete capitulation to those who administer the Chantrey Bequest. He says that works of art 'are made by artists to give pleasure to other people. It is for the people appealed to to say whether they are pleased, not for artists to say whether they ought to be.' Until Sir Martin is more precise we shall assume that by 'people' he means all people, not merely a few, self-chosen or appointed by another's will, as are the Chantrey Trustees. If this be his meaning then all works of art need not be masterpieces in order to give pleasure to 'other people.' We have seen the veriest daubs afford the greatest pleasure. And herein lies the justification of the Chantrey Trustees. They argue, no doubt, that their bounden duty is to appeal to the general public, who are many-minded and of varied taste and education in matters of art. No other view-point could justify the Chantrey collection as a whole. It comprises pictures and statuary to please the most learned and critical, as well as works that bring joy to the eyes of simple people to whom high art is a byword for eccentricity or snobbery."

We learn from the *City Press* that, having acquired the freehold of three adjoining properties, the Painter-Stainers' Company has commenced in Little Trinity Lane building operations which, without impairing the ancient portions of the Hall, will afford additional accommodation and improve the front of the building. The architectural work has been entrusted to Mr. H. D. Searles-Wood, F.R.I.B.A., of the Wool Exchange. The three acquired houses, which lie between the Hall and the Metropolitan District Railway, are being demolished, together with the Beadle's House, at the rear. In the elevation a distinction will be made between the Hall proper and the new buildings that are to take the place of the demolished properties. The former will be largely in stucco, and the latter in Crowborough brick, though they will be tied together, as it were, by a common treatment of their lower portions in Portland stone. While retaining the present entrance from the street, the architect has provided for a diversion of the staircase. By the clearing away of a corridor and two offices, it will be practicable to enlarge the Court Room on the ground floor. Old features will be represented in the new work, and old stained glass will be worked in. On the first floor the Livery Hall, dating from the seventeenth century, will be enlarged by an additional bay, to construct which the Minstrels' Gallery will be set back, and other readjustments made. The famous Painted Chamber, on the same floor, is not to be touched, save for the addition of a little space to it. The Minstrels' Gallery, previously mentioned, is on the level of the second floor. It will be set back in an angle in such a way as to present two fronts to the Livery Hall. On the same level as the gallery is the Beadle's Sitting Room, which will remain much the same as before. The new

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northward block will to a large extent be let as offices, though every opportunity will be taken of enlarging and rearranging the accommodation for the Company's staff. By virtue of an arrangement with the Metropolitan District Railway Company, the Guild acquires certain rights of light, which will have the effect of converting what were formerly cellars into a convenient lower ground floor.

At the concluding session of the annual meeting of the Iron and Steel Institute the following resolution was unanimously adopted:—That the names of all alien enemies be struck off the list of members of the Institute, and that steps be taken to amend the by-laws so that they provide for the future that, in the event of war existing between this and other countries citizens or subjects of which are honorary members or members of this Institute, such honorary members or members shall *ipso facto* cease their membership.

The value of a return frontage to a plot of land is not easy to compute, and a correspondent in the *Estates Gazette* introduces the subject by the following letter:—

Sir,—On an estate being developed there are some plots of land having a straight frontage to a new road, other plots having a circular frontage. Plot A has a frontage of 130 feet, which, for example, is worth £2 per foot frontage, and is worth £260. The adjoining plot B has a circular frontage of 350 feet, and it would, of course, be absurd to say it was worth £2 per foot—£700. The owner suggests that its frontage, for valuation purposes, should be 200 feet extended on A's frontage line.

But the writer is in some doubt as to that being the correct method of measuring and valuing the frontage. Surely the plan on a conveyance or lease would give and indicate the circular frontage? Would it not be a better method of arriving at the value of the circular frontage plot by comparing its superficial area with the plot A? But that does not clear up what is the frontage of plot B for valuation purposes. I shall be very glad if your readers will give me assistance herein.—Yours, &c., CONSTANT READER.

To this a reply appears in a subsequent issue of our contemporary:—

Sir,—Re query in the issue of May 8 by "Constant Reader," a plot of land suitable for building purposes, having either a straight or a circular frontage, has its value fixed by the amount of the bricks and mortar that can reasonably be erected upon it, and by the rack rent the property, when so covered, will bear. The capital value of the land bears a certain proportion to the cost of the bricks and mortar, which varies with locality.

If plot A, having a frontage of 130 feet and worth £2 per foot, will hold a certain amount of building costing £x, what amount a similar building will plot B, with a circular frontage of 350 feet, hold? The amount is probably less than the mere frontage figures would give. Suppose B to hold double the amount of property that can be built on the straight frontage of A, viz., £x × 2. Then the "effective" frontage of B is 260 feet only, and the value of that frontage on the scale given of £2 a foot is £520. A method based on area would be erroneous.

The plan on lease or conveyance would show the actual figures of the several dimensions of the plot in feet and inches.—Yours, &c.,

G. E. GREGSON & SON.

In our opinion neither the "owner" in the first letter nor Messrs. Gregson has correctly solved the problem. The two plots might have exactly the same capacity for bricks and mortar; but there can be no question that, whether for shop purposes or for residential purposes, plot B would be more attractive, and, therefore, possess a higher value than plot A, in almost every instance.

A return frontage has a market value. In some cases of shop property the return may be as valuable as the main frontage, but in the majority of instances, and certainly for residential purposes, the return, whilst possessing a value of its own, would not be equal to the principal frontage. In the case of a circular frontage the gradation from the most valuable footage to the less could be expressed by a true curve, the determination of which would be an interesting problem for an experienced valuer.

In a discussion by the Glasgow Town Council of the proposed alterations around the Glasgow Cross Steeple, Dr. Gemmell asked if the Cross Steeple of Glasgow was one of the architectural structures connected with or

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illustrative of contemporary culture, civilisation, and conditions of life of the people of Scotland, which were placed under the care of a Royal Commission in 1908 by King Edward VII.; and had the removal and reconstruction of the Cross Steeple received the Commissioners' approval and consent?

The Town Clerk, in course of reply, stated that that morning he received a reply to a communication which he had sent to the Department of Ancient Monuments and Historical Buildings stating that he was right in assuming that the steeple had not been declared an ancient monument under the Act. But, under statute, power was given to the Commissioners to include, if they thought fit, any other monuments in the country as an ancient monument within the meaning of the Acts. Facilities were given by the Master of Works and Mr. Keppie to representatives from the Office of Public Works for the examination of the steeple, and he believed these representatives had to report to the authorities for their consideration. Approval and consent for the removal and reconstruction were not required.

Replying to Mr. Battersby, the Town Clerk said that they would wait for a reply before anything was done.

ARCHITECTURE AT THE ROYAL SCOTTISH ACADEMY.

THE Royal Scottish Academy has now entered on its eighty-ninth annual exhibition of painting, sculpture, and architecture at the Edinburgh Galleries.

The room allotted to architecture is octagonal in shape and situated to the right immediately at the head of the grand staircase, and is well adapted for its purpose of architectural display.

A general look round the room shows up the fact that foreign architecture is conspicuous by its absence, and the usual places of honour given to the Beaux-Arts drawings have been filled up with works by our own notable architects.

English architecture is also sparsely represented, so that the exhibition this year may be said to be more or less a typically Scotch show, which is not an altogether undesirable state of affairs considering it is the Scottish Academy.

Perhaps the most striking drawing in the room is the first premiated design for St. Paul's Bridge, London, by Mr. G. Washington Browne, R.S.A.

The drawing, which is a large black-and-white wash perspective, boldly rendered in strong architectural lines, looks at first glance a little lacking in detail and finish, but is nevertheless a very meritorious work. The drawing shows the one side of the bridge only, with the grand staircase leading down to the Embankment at the lower level. There are two of these staircases, one at the right and one at the left of the bridge, each marked by a triumphal arch entered at the side. The stair, which is a double one, circles down both ways round an equestrian group of statuary in the centre, and finishes at the lower level in a straight flight of steps. At the sides of each triumphal arch stand obelisks, which might have been better omitted, as there appears to be sufficient features without them.

At each side of Mr. Washington Browne's drawing of the bridge are hung two large frames of Duart Castle, Island of Mull, by Messrs. John Burnet & Son. The castle, which has been restored from a mere shell of ruins, has an elevated rocky situation overlooking the sea. The frames exhibited have a very nice softly rendered pencil perspective in each, showing different views of the castle. Round these sketches are ranged a number of small photographs, which show by different views the state of the ruin in 1911 in comparison with the corresponding views of the completed work in 1914. The building is simple in expression, and has the true effect of the old Scotch castle with its simple openings and huge masses of rough masonry. The old keep has been formed into the drawing-room, and the castle modernised in proper keeping with its tradition.

The Institute of Chemistry is another exhibit by Messrs. John Burnet & Son, and is a quiet, Classic building, Italian in character, consisting of three storeys and basement. The ground-floor windows have an arch treatment, while the upper storeys have merely plain openings. The main entrance, although off the centre of the façade, does not give the lop-sided effect one might expect under the circumstances. The doorway has a broad, bold architrave with a broken pediment over, typical of Dr. Burnet's work. Above the door is a niche, in which is placed a statue of Joseph Priestley. The half-inch drawing shown is a very complete working drawing, carefully thought out in every respect and typically American in the way it has been so fully detailed and figured. The perspective sketch of the building is done in strong black-and-white line and brush work, with an absence of detail which gives it quite a poster effect.

Mr. James Miller, A.R.S.A., sends two very fine pen-and-ink perspectives by Mr. Alex. McGibbon, A.R.I.B.A., of mansion houses in Ayrshire. Kildonan Mansion, Barrhill, is a mansion of very considerable size, built entirely in masonry, with small square dressed stones. The gables have a simple English character, the windows being small and divided up with astragals. The building is finely grouped and expressive in character and style. The other house, in Blanefield, is similar in style to this one, but not quite so large.

A large half-inch scale drawing by Mr. Hippolyte J. Blanc, R.S.A., occupies the centre space in one of the end walls. The drawing is carefully rendered in soft tones of colour and black-and-white wash. The detail is of the centre motif of the Edinburgh Merchant Company Ladies' College, Queen Street. The drawing, although a finely finished work, does not excel in its architecture, the order used at each side of the doorway being out of scale with the large Ionic order above, which runs through two storeys. These small columns might have been better omitted.

At each side of this work are hung two large perspectives about the same size, both perspectives by Mr. Alex. McGibbon, A.R.I.B.A. The one to the left is of a training college and practising school, Dundee, for the training of teachers. Mr. T. Martin Cappon is the architect. The building is the usual Classic school building of no great architectural interest, the attraction only being in the fine perspective. The drawing to the right is the other McGibbon perspective, and is perhaps the finest pen-and-ink line perspective in the room. The work is by Messrs. Watson & Salmond, and shows the new extension to Glasgow Municipal Buildings. The drawing illustrates the new extension to Cochrane Street, which is a separate block, connected to the old buildings by an archway over John Street. The end pavilion only of the old buildings is shown, and the extension does not seem to carry through any of the features or character of the old, although it is a finely designed block in itself and architectural in every way. The design is symmetrically treated in a very broad manner, with large windows affording the maximum light.

Sir Robert Lorimer, A.R.S.A., has only one frame this year, with three photos—the new choir stalls, organ case, and east-end screen to Dunblane Cathedral. The stalls and organ case show very elaborate carving and tracery, while the screen shows a treatment of fan vaulting, all executed in oak.

One of the largest drawings exhibited is a bird's-eye view in colour of a proposed civic centre, Dundee, by James Thomson, the city architect. The view is from the south-west, and is a magnificent town-planning scheme, embodying new municipal buildings of strong Classic design, having a dome worked up in masses and centrally placed over the block. The scheme includes forming new boulevards with double avenues of trees at each side, a huge paved forecourt in front of the buildings, with an architectural lay-out of gardens and plots, with fountains, statues, and rich flower borders in bright colours. The river edge is also treated architecturally with stone parapet and statue groups at intervals. The scheme is quite a grand one, and shows a start in the way of civic design for such a town as Dundee. Mr. Thomson also exhibits three photographs of a central and two district libraries in Dundee, all in Classic style, with quite an individual touch about them and worthy of attention.

Mr. A. N. Paterson, M.A., A.R.S.A., has a large coloured perspective of new premises at Gourock for the National Bank of Scotland, which occupies the centre position in one of the walls. The building is a corner block, with entrance on the angle, and oriel over same. Gardens with large trees are shown in the foreground. Architecturally the building has more or less the Scotch tenement appearance, and is only interesting because of its fine colouring. Other works by the same architect are additions and alterations to Camis-Eskan, Dumbartonshire, and a house at Helensburgh. Nine photos are hung of the

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first-mentioned work, which are all very nice architecturally. The photo of the inner hall is specially interesting, as it shows a barrel-vaulted stone roof in rough-looking masonry. The walls also are stone, the openings being arched and having polished stone rybats and voussoirs.

The house at Helensburgh is another nicely coloured picture, without being anything special in design.

On one of the angle walls Mr. Edwin L. Lutyens, A.R.A., has hung the Government House, Delhi, illustrated by four photographs taken from the original water-colour perspectives by Mr. Walcot, and a block plan in the centre of the photos gives part of the lay-out. The photos show the Government House from the south, the main front, and the portico as seen between the secretariats. These Walcot perspectives are all, however, well known already, having been published before. They are fine examples of Mr. Walcot's perspectives.

Haggerston Castle, Northumberland, by James B. Dunn, is illustrated by a fine half-inch detail drawing of the porte cochere finished in soft tones of wash. He also has three photos of a house in Peebleshire, which are quite good.

The Lowson Memorial Church, Forfar, by A. Marshall Mackenzie, A.R.S.A., is a very good example of church work bearing the true Scotch character. It is a simple cross in plan with a tower over the crossing, the windows being lancet throughout.

Messrs. Honeyman & Keppie show three small sketches of the Glasgow Cross alterations. The sketches show different views of the Old Tolbooth steeple, which is evidently being taken down and re-erected in a new position in line with the Trongate underground station, and stopping the vista along Argyle Street.

Messrs. Alex. Cullen, Lochhead & Brown have three photos of entrances done by them in Classic style, which possess quite an individual touch. So also do the three interior photos of the Mitchell Library, Glasgow, by Mr. Wm. B. Whitie.

Messrs. Clifford & Lunan have three exhibits, two being of a house at Kelvinside, the other being a photo of the new Perth Town Hall, quite worthy of note.

Mr. P. Macgregor Chalmers has one or two photos of church work, which are done in his usual Norman style, and are very fine pieces of work.

Other works worthy of note are a coloured sketch of a house by Messrs. Maclaren, Sons & Soutar; church photos by Messrs. Stewart & Paterson; photos by James A. Morris, of Ayr; additions to church by Messrs. J. Jerdan & Son; and Mr. A. G. Henderson's small wash perspective of premiated design for Langside Library, Glasgow.

MR. NORMAN SHAW'S DESIGN FOR REGENT STREET QUADRANT.

IN the House of Commons on Monday (May 17), Mr. Soames asked whether Mr. Norman Shaw's design for Regent Street Quadrant had been abandoned; whether in that case another design was being prepared, and by whom; and whether it was to be in accordance with the recommendations of the committee that was appointed to report on the subject.

Sir Harry Verney (Parliamentary Secretary to the Board of Agriculture): Mr. Norman Shaw's design was found to be not well suited to the traders' requirements, and has had to be abandoned. Several designs for completing the Quadrant have since been considered, the latest one being by Mr. John Murray, F.R.I.B.A., the architect who has for some years advised the Commissioner of Woods on matters connected with the Crown Estates in London, and who designed the offices now occupied by the Commissioners of Woods. Mr. Murray's design for completing the Quadrant is believed to be in accord with the recommendations of the committee to which the hon. member refers, except in the matter of the height of the roof, which will be lowered.

COMPETITION NEWS.

BRADFORD.—Mr. Reginald Blomfield, R.A., the assessor appointed by the Bradford Corporation to consider the competitive designs for the replanning of streets in the central area of the city—the area lying between Forster Square and Peel Square and bounded by Market Street, Leeds Road, and Hall Ings—has made his awards, and the successful plans will be hung in the picture gallery of the Cartwright Memorial Hall until the 29th inst. The area to be remodelled comprises between ten and eleven acres, and among the conditions imposed upon competing architects were that Bank Street should be continued into Leeds Road, and that the *Bradford Daily Telegraph* buildings and the Swan Arcade should be retained. In all fifty-four sets of designs were submitted. The awards are as follow: 1 (£500), Messrs. Gibson, Skipworth & Gordon, 5 Old Bond Street, London (Design No. 25); 2 (£300), Messrs. Patrick Abercrombie & Lionel B. Budden, the School of Architecture, Liberty Buildings, Liverpool (No. 14); 3 (£200), Mr. Reginald Dann, Hunting Grove, Crawley, Sussex, and Mr. John H. Horniman, 23 Robinson Street, Hastings (No. 36).

DARWEN.—The Lightbown Trustees have accepted the award of their assessor Mr. G. H. Willoughby, F.R.I.B.A., Manchester, in the recent competition among local architects for the cottage homes to be erected at Sunnyhurst, Darwen. The design submitted by Mr. G. Gilbert Tames, of Darwen and Blackburn, has been chosen for the scheme.

ILLUSTRATIONS.

"PETWOOD," LINCOLNSHIRE.

"PETWOOD" is a domain which lies on the border of the Lincolnshire Fen near Kirkstead and Tattershall Castle, and since the war has been converted to use as a hospital. Originally a straggling bungalow, it has been altered and greatly enlarged during the last four or five years under the direction of Mr. Frank Peck.

The gardens, with their temples, iron screens and gates, sunk ponds and fountains, stone terraces, statuary, sundials, screen walls and niches, and other garden ornaments, are famous in the locality, and they form a setting (conceived independently of the architect) calculated to appreciate to the utmost the effect of this modern interpretation of the Tudor to Jacobean style. The inspiration for much of the architectural and garden work comes mainly from the owners themselves.

The main characteristics of the garden front of the house are its length and lowness, the extensive roof broken up by occasional rich gables, and ranges of tall stately chimneys somewhat symmetrically placed; extensions have been thrust out into the colonnaded verandah and intervening spaces result, forming now a series of bowers.

The principal feature of the courtyard or north front is the stone porch, with the projecting storeys and oriels over of the "Paul Pindar" type.

The substantial oak half-timbering—except the oriels and the oak balcony—highly decorative in parts, is the work of local carpenters, and is good craftsmanship void of the mechanical touch of the straight edge and the plane.

The bricks for external facings are Lincoln wire-cut red bricks, thin size, by the Lincoln Brick Company. The stone features are of Ketton stone. The roofs are covered with "Rosemary" tiles. The half-timbering is sawn English oak.

Messrs. John Daymond & Son, of Edward Street, Vauxhall Bridge Road, carved the external stonework of porch, the oak-room bay, and garden entrance; also the oak panels and figure pilasters of the oriel projections, the oak chimney-pieces, and the carved features of the main staircase of the interior oakwork, and they modelled and cast the plaster enrichments. Mr. Arthur May carved and fitted the external oak balcony over the oak-room bay—personal work. Messrs. Maple & Co. made the staircase and hall panelling. Messrs. Lowndes & Drury, Lettice Street, Parson's Green, executed all lead glazing; Messrs. Swain, Verney & Co. and Messrs. Wragge & Co., the metal casements.

The general builders were Messrs. William Wright & Son, Ltd., of Lincoln, who also did the stonework and made the oak panelling and chimney-pieces, &c., of the oak room. Much of the detail was drawn on the spot and superintended in execution by the architect, there being no clerk of works.

PLANS for the erection of a large theatre, with shops and café, in Market Street, Galashiels, by the Galashiels Playhouse Co., Ltd., have been submitted to Galashiels Town Council. The new theatre will be on a site in Market Street.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A general meeting of the Royal Institute was held on Monday evening last, May 17, at Conduit Street, W., Mr. Ernest Newton, A.R.A., President, in the chair.

Mr. E. Guy Dawber, Hon. Secretary, said the sad news had already been announced in the "Journal" of the death of a young associate of the Institute, Mr. Albert Edward Lowes, who was serving in the Army Service Corps attached to the 6th Northumberland Fusiliers, and was killed while carrying out his duties in the action near Saint-Julien on April 26.

It was with deep regret that he had to announce that another of their young associates, Captain George Edward Hunter, of the 6th Northumberland Fusiliers, lost his life in the same action, together with his younger brother, Captain Howard Tomlin Hunter. These young officers whose lives had been so cruelly cut short were the only sons of Mr. and Mrs. Edward Hunter, of Wentworth, Gosforth. A brother officer, writing of their associate member, said: "He led his men with great courage and a total disregard for himself. He was right in front of the enemy's position and was killed by a shell fired at short range."

The sad news had also just arrived of the death of William Leonard Boghurst Leech, who was only elected associate as recently as last December. Mr. Leech was wounded in the fight for Hill 60, was invalided home, and died at the Emergency Hospital, Westcliff, last Friday.

Mr. Dawber then moved that the regrets of the Institute for the loss of these brave young men who have given their lives for their country be entered on the minutes of this meeting and that a message of sympathy and condolence be conveyed to their relatives.

The members signified assent by rising.

The Hon. Secretary said he regretted also to have to announce the decease of William Henry Spaull, of Oswestry, Fellow, elected 1890, who died from the effects of a street accident last week. Mr. Spaull, who was seventy-five years of age, was surveyor to the Diocese of St. Asaph, and was alderman and ex-mayor of his town. He begged to move that a vote of sympathy and condolence be passed to his relatives.

The decease of the following members was also announced: William Thomas Grewcock, Associate, elected 1896; Daniel Powell, Licentiate; and John Joseph Seanor, Licentiate.

Mr. H. V. Lanchester, F.R.I.B.A., then read a paper on

The Evolution of the Architectural Competition.

Though there be some, said Mr. Lanchester, who doubt as to the beneficial influence of the competition on design, by a closer study of the question these doubts may perhaps be dispelled. The lecturer devoted himself to the history of the competition, leading up from the first rudimentary efforts in this line to those of our own day which exhibit the most systematic organisation. It was his endeavour to let the facts speak for themselves, so that deductions rather than dogmas lead to the conclusions arrived at.

No definite record exists of an architectural competition in Greece and Rome, but the principle was one so familiar to these peoples that probably they took place.

In Leader Scott's work on the Comacine Guilds we find that mediæval competitions arose under rather favourable circumstances, as the members of the Guild were naturally accepted as qualified to adjudicate. In the case of Siena Cathedral a council of monks, with masters of the Guild, met to consult on the placing of the columns in the second foundation, and also on July 17, 1357, to choose between two designs of columns and a chapel made by Francesco Talenti and Orcagna, when each candidate elected two masters as arbiters. These could not decide, and Piero di Migliore the goldsmith was taken as umpire, the parties binding themselves to abide by his decision. Giovanni di Lapo Ghino and Francesco Talenti were ordered to make new designs. At length, on July 28, Orcagna's plan was chosen.

Unfortunately these Guilds did not contrive to keep abreast of the times, and when we come to the competition for the dome of the Cathedral at Florence, we find that Brunellesco, who ultimately proved to be the ablest architect, was outside the brotherhood. Brunellesco's strike for independence when he found himself associated with his old rival Ghiberti appears to have given the death-blow to the great Masonic Guild, which, as it became more unwieldy, had been slowly disintegrating. Although he was matriculated into the Guild, it appears to have been against his will, as he ignored this membership, and was imprisoned for not paying his fees.

Thus the Guild drops out as a body controlling competitions, and for a long period such decisions as are made come ostensibly from the laymen interested, or, in modern terms, the promoters.

Though numerous designs were prepared for St. Peter's at Rome, and though some of these were still under consideration when another was demanded, the circumstances hardly justify us in regarding them as competitive. We come nearer to the idea of a competition in the case of the Louvre, where at one stage a selection could have been made from a number of designs.

In the eighteenth century we come to a better organised competitive proposal—namely, that for a monument to Louis XV., where the conditions were exceptionally open in their character: "It was on June 27, 1748, that the Provost of the Merchants and Aldermen asked his Majesty's permission to raise, in such a position in his capital as he might be pleased to allocate, a testimony to the zeal, the love, and the gratitude of his people. M. de Turneham, then his Majesty's director of building, invited the architects of the Academy to prepare schemes for the site of such a monument in the quarter of Paris that appeared to the competitor the most suitable. Not only the Royal architects, but also several other artists seized the opportunity to show their zeal and their talent."

These schemes, however, involved great disturbance among important industrial and commercial interests, and the King having selected an open area between the Tuileries and the Champs-Elysées, a fresh competition was initiated. A site plan was issued accompanied by the single instruction that the King's statue should be on the line of the broad walk in front of the Tuileries garden. Several of the designs had special advantages, and M. Gabriel was directed to combine these, in order to include them all in the executed work. Thus was determined the design of the Place de Louis XV., now the Place de la Concorde.

In the eighteenth century the number of architects in the British Isles was not a large one, and competitions were usually limited to a few—for example, in 1768 James Gandon, Thomas Cooley, and Thomas Sandby competed for the New Exchange, Dublin, which Cooley secured. The competition for the East India Company's building in 1799 produced designs from Holland, Dance the younger, and Soane. Slightly earlier Thomas Harrison won the competition for rebuilding the Castle at Chester.

The fourth decade of the nineteenth century witnessed three important competitions. The first was that for the Houses of Parliament. Ninety-seven designs were submitted to four Commissioners, who on February 29, 1836, unanimously selected that by Charles Barry as the best. For St. George's Hall, Liverpool, there were eighty-six competitors, among whom H. L. Elmes was successful, subsequently winning the Assize Courts Competition in 1841. The two buildings were combined and carried out during the succeeding ten years. The third was that for the Royal Exchange. Robert Smirke, Joseph Gwilt, and Philip Hardwick were the assessors. The first premium was awarded to William Grellier, the second to A. de Chateauneuf and Arthur Mee, and the third to Sydney Smirke. Designs by T. L. Donaldson, Richardson, and David Moscatta were commended, but were considered to exceed the stipulated cost of £150,000. None of these designs was carried out.

On September 30, 1856, the Commissioners of her Majesty's Works and Public Buildings gave notice that they were prepared to receive three designs from architects of all countries—the first to comprise a scheme for the concentration of the principal Government offices on a site lying between Whitehall and the New Palace at Westminster; the other two, designs for buildings which it was determined to erect forthwith as parts of such scheme. One of these was to be a Foreign Office, the other a War Office. The paper of instructions to architects, 1,628 copies of which were issued, gave the sizes of all, or most of, the rooms required. The prizes awarded were three for the block plan, amounting together to £800; seven, amounting to £1,900, for the Foreign Office designs; and seven, amounting to the same sum, for the War Office designs. But none of the premiated designs (which remained the property of the Office of Works) were executed.

The competition for the Law Courts in 1866 and 1867 was conducted by a Commission, with whose concurrence the following were appointed as judges: Chief Justice Cock-

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burn, Sir Roundell Palmer, W. E. Gladstone, W. Stirling (Maxwell), and W. Cowper, First Commissioner of Works.

In response to an application from the competitors, two professional men—John Shaw and George Pownall—were added. The judges took into consultation every interested party they could call to mind, asking for verdicts on the plans from each special point of view. As may be imagined, though the designs submitted were only ten in number, the affair got into a desperate tangle. As an example, a report on ninety-nine various points of detail based on the views of heads of departments and other authorities shows that every competitor scores somewhere. Edward Barry is an easy first, and G. E. Street near the bottom of the list. There was never a more painstaking jury, but the value of their work was neutralised by an almost complete ignorance of the technique of design. The professional members were evidently overweighted by the ideas of their distinguished *confrères*, and the ultimate results were so confused that everyone concerned must have been relieved when the great beauties of detail in Street's design were made clear, and a justification was found for awarding him the work.

One of the earliest undertakings of the Royal Institute of British Architects was the appointment of a committee to consider public competitions. Their report is dated January 24, 1839. In view of the close approximation of this date to that of the creation of Pecksniff, perhaps the most amusing paragraph is one running as follows:—

"A much more serious train of evils is entailed upon the public and the profession by the facility with which the system lends itself to collusion, many instances of which have been amply proved to your committee, but to which they think it inexpedient more fully to refer. . . ."

The rest of the paragraph consists of a decorative pattern in asterisks. There are other paragraphs that bear more seriously on the problems of the present day. One runs as follows:—

"The arguments advanced in favour of competition are sufficiently forcible. Emulation is said to be the soul of excellence in the arts and sciences—the recognised talents of the elder professor are supposed to be maintained in activity and progressive improvement, and his employers to be protected from the routine manner which security in public patronage and private practice are too apt to produce: while the opportunity is afforded to the young aspirant to take that place in public estimation to which his talents may entitle him."

Again we find:—

"But whatever the conditions may be, they ought to be clear and explicit, that the competitor may know precisely and unequivocally upon what he has to rely. Whenever it may be expedient to lay down definite instructions, they ought to be strictly adhered to, when judgment is to be founded upon them, and every design rejected which shall be found not to conform to them."

In 1908 the R.I.B.A. appointed a Special Committee on the Jury System of Assessing Competitions, which reported on November 10, 1908, as follows:—

"1. That in competitions for works, estimated to cost £100,000 or over, the jury system be adopted, subject to the following conditions: (*a*) That each jury shall consist of three architects of experience and ability; (*b*) the chairman of such jury shall be nominated by the President, and the other members by the Competitions Committee.

"2. That in competitions for works estimated to cost between £30,000 and £100,000 there shall be one assessor and two assistants, subject to the following conditions: (*a*) That the assessor shall be nominated by the President, and shall be responsible for and make the award; (*b*) that the assistants shall be nominated by the Competitions Committee, and their duties shall be advisory only.

"3. That in competitions for works of less value than the above the present system of assessing shall continue.

"4. That the scale of fees for assessing competitions at present set out by the R.I.B.A. be adhered to.

"It is suggested that the full fees be divided in equal shares between the three assessors after deduction of thirty guineas which the chairman should receive. . . ."

A Minority Report in the following terms was appended:—

"The undersigned members of the Competitions Committee, while cordially supporting the recommendations of the committee, feel impelled to add that it is their view that the present dissatisfaction is due less to the existing methods of assessing than to the lack of any defined and recognised standard as to the qualities that should distinguish a fine building, and that in default of such a standard no system of assessing, however perfect in itself, can do more than mitigate the evil.

"They consider, therefore, that the best efforts of the R.I.B.A. should be directed towards promoting a unity of aim in regard to architectural expression. This, however, does not appear to be a question on which any immediate practical recommendation is possible, being a matter of slow growth, the outcome of a better system of education. In the meantime the absence of such unity must affect the method of assessing, and the divergence of aim and difference of opinion among architects makes some application of the jury system more than ever advisable. . . ."

From these sketch outlines of the history of architectural competitions it will be clear that knowledge has usually been very much in advance of practice. Two reasons may be adduced for this. The first is the lack of systematic training in the profession as to what the essentials of architecture are.

The second reason why our practice does not reach our standard of knowledge lies in the necessity for compromise in dealing with promoters, who often only partially understand the real purposes of a competition, and even when they do are technically inexperienced in the methods best suited to achieve these. On the other hand, more important competitions have fallen short of the standard they might have reached by the architects' default than by reason of any intentional malpractice on the part of promoters.

The three parties to a competition are: (1) The promoters; (2) the assessors or jury; (3) the competitors.

The promoters may or may not schedule their requirements before inviting professional aid, but this is almost the full extent of what can be profitably undertaken without consultation with the professional advisers who are to conduct the competition. The relationship between the promoter and the assessor is in every respect similar to that between client and architect during the earlier stages of any projected building work. The fact that a competition is to be held in no way justifies the abandonment of preliminary consultations.

The idea that everything must be in shape before the assessor or assessors is appointed is utterly wrong, and has been responsible for the comparative failure of many a competition. On the architects' side this responsibility has not received much more definite recognition than with the promoters.

Continuity from start to finish, such as we find in non-competitive work, is the great need in competition practice. At present there is a tendency to cut it up into three distinct stages, greatly to the detriment of the result. The first stage before the appointment of the assessor or jury, the second during their appointment, and the third after the selection of the design.

To put competitive practice on a sound basis, the breaks between these stages should be bridged over.

Let us assume that some public body is promoting a competition and has appointed a Building Committee. After some preliminary discussion they would ask for the appointment of an architectural adviser and depute two well-qualified members to confer with him, possibly the chairman and city engineer, or chairman and medical officer, according to the class of building. These three would draw up the programme. Before issuing this, two other independent architects would be added to form a jury of five, and on the programme having been agreed by them, it would be issued to competitors. The usual stages of questions, replies, and receipt of designs having been passed through under the supervision of this jury, its members would jointly make their award, dealing very fully with all the considerations necessary to inform the successful competitor as to any fresh aspect that has occurred to them during the adjudication. Their award might be in two parts, one for publication, and the other more of the nature of a confidential communication to the selected architect in order to make him conversant with problems and difficulties that may affect the further development of his design.

A good architect is not necessarily a good assessor. The expression of personality within the confines of architectural technique is the measure of artistic quality, but the less imaginative man with a better training in technique may be superior as a judge to the greater artist who is perhaps unable to analyse the operations of his own mind.

As a general rule, experience as a competitor is almost essential as a qualification for the single assessor, but in the case of a jury this experience may be dispensed with

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in some of its members if it is in other respects advantageous to have a wider field for selection.

The adjudication of competitive designs should not be entirely in the hands of the older and more experienced men, whose sympathies are liable to incline towards the earlier as against the newer method. One of the chief recommendations of the jury system is the facility it affords for securing both the experience of the elder and the fresher point of view of the younger men.

Finally, we come to the competitor, who, when he has decided to compete, sets down to master the programme, or conditions, as the document is more usually called. If the programme is well drawn up it should at once give the competitor a good general impression as to what the promoters have in their mind; if it is not, the competitor, by much reading and re-reading, will gradually obtain, from accidents of phrasing here and there, some idea of the points to which importance is attached. With a good programme no further questions should be needed, but with a bad one the competitor can help to patch it up by means of questions on salient points.

From the competitor's point of view the best programme is one that states clearly what is wanted but makes no attempt to indicate how these wants are to be provided for. As a rule, the allocation of the relative positions for the accommodation asked for is a mistake, tending to hamper freedom in the conception of the design. If special requirements have to be met, it is far better that these should be thoroughly explained than an attempt made to anticipate the competitor's work by specifying some definite arrangement.

Having mastered the programme to the best of his ability, the competitor then turns his mind to its solution. In order to do this he must have formed a conception as to what the dominating factors of the problem are. These are very varied according to the class of building. In one case aspect may be the most important consideration, in another the relative value of the groups of accommodation, in another the special peculiarities of the site, or perhaps the axial placing of the building, not to mention numerous other factors less frequently the dominant ones. Then we come to the demands next in order of importance, and the attempt must be made to reconcile these with that placed first.

Somewhere about this stage the competitor will have had to form an idea of the general massing of his building, and of the subdivision of this into various sections. This subdivision may be mainly vertical, as in the case of a hospital, or mainly horizontal, as is the usual practice with public offices, or a mixture of both.

The main object to keep in view at the earlier stages of a competitive design is the retention of everything in as plastic a form as possible, so that all possible alternatives may be considered and compared before too much time is taken up with the detail of any one of them.

The double competition has its uses where the promoters and their advisers have been unable completely to formulate their views, but almost its sole use is in placing before them a series of definite solutions from which they can realise how they have failed to grasp and express all that they had in mind. They are then able to supplement the programme and secure a design more closely approximating to their requirements. If this is clearly recognised it disposes of any argument for or against double competitions.

Discussion.

Mr. A. W. S. Cross (Vice-President), in proposing a vote of thanks, said the subject of the lecture was one of particular interest to all architects, and they would agree that it had been most ably dealt with. It was remarkable that Mr. Lanchester should be unable to obtain any definite record of architectural competitions in Ancient Greece. For it was difficult to believe that the Greeks were not familiar with them, for the competitive spirit was early cultivated. Thus we read that when the Persians conquered Athens they were amazed to find the local youth severely training not to win wealth but glory. There were also public competitions promoted for rhetoric, literature, dramatic writing, and so on. The Choragic Monument at Athens is a standing memorial of Lysicrates as a trainer of the chorus. Herodotus records that after a certain naval battle prizes were to be awarded by a jury composed of the various generals: each member possessed two votes. When it was found that each had given the primary vote to himself, but all the secondary votes were for the same man it was decided to award the prize to this latter. Many architects insist that the competitors are the right judges of a competition; if this is so some such system of secondary votes might best meet modern requirements. The way designs were obtained for the dome of the Cathedral at Florence, to which Mr. Lanchester had alluded, hardly constituted it a competition as we understand it, inasmuch as there were no elaborate designs, but each artist had to explain how he would construct the dome from the substructure. Brunellesco had his own ideas, but, as Vasari says, knowing the intelligence of the assessors, the envy of his rivals, and the inconsistency of the public, he was afraid to make any drawings. Consequently he harangued the public for days; his remarks proved so unintelligible to them he was finally refused admittance to the assembly room.

Mr. J. G. S. Gibson thought architects were deeply indebted to Mr. Lanchester for compiling a paper which was of such value to them. There was scarcely anyone among the young men who take up architecture who do not get drawn into the meshes of competition. Perhaps there is a fatal fascination about it. But it is astonishing how much good comes to him from these attempts to establish himself in an architectural position and to give individuality to his work. The Royal Institute had done much valuable work in trying to carry on architectural competitions so that promoters and public have a fair chance of the best services the profession can give. Everything was done to improve the quality of the architecture—which was the desire of every architect to-day. When the paper came to be published in the professional journals and their own Proceedings it would be worth their while to read it carefully as it contained many things of extreme value.

Mr. A. E. Richardson and Mr. A. J. Davis having spoken,

Professor Adshead said Mr. Lanchester's paper would remain for some time to come as the standard treatise on competitions. He (the speaker) had thought they would have heard more criticism of the different methods of dealing with competition. Speakers seemed to refrain from touching on that dangerous ground. There appeared to him to be a danger in the jury system of assessing.

Mr. H. H. Statham pointed out that with a single assessor, however honest he may be, it was only the opinion of one man which was obtained. His belief was in two or three assessors. A single assessor might be eminent as an artist, though unsuited to that particular work.

Mr. H. W. Wills considered the competition system has shown its justification in the much greater attention which architects have been forced to devote to planning. Planning was the most important thing in architecture. The fact that a man has had to plan and plan again and again in order to have a chance of success had made him pay attention to the subject. The advance since the 'sixties and 'seventies was, in his opinion, due almost entirely to this practice given by competition. Their use has been to combine the planning of the seventeenth and eighteenth centuries, which was grand in its outline but unpractical, to the practical planning of the early and middle part of the nineteenth century and to help combine the two into one system.

Mr. Ernest Newton, A.R.A., in closing the discussion, said that one thing which struck him while listening to the more historical part of the paper was that whatever the system of assessing, when a scheme was head and shoulders above the others it was generally successful. The best men therefore have merely to produce something that was head and shoulders above the others. The assessor's work would then be extremely easy.

The vote of thanks was then passed by acclamation.

The next meeting will be held on Monday, June 7, when the results of the annual elections will be announced and an election of members will take place.

At the last sitting of the Ayr Dean of Guild Court the Burgh Surveyor submitted statistics of the plans passed by the Court during the year ended May 15. The number of warrants granted was twenty-six principal and eighty-six minor, and the total estimated cost was £42,673, as against £37,236 in the previous year, and £20,343 in 1912-13. The warrants were classified as follows: Dwellings (12), £2,650; business premises and public buildings (9), £34,900; alterations, £2,973; minor warrants, £2,150.

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A PROPOSED SOCIETY OF "FRIENDS OF ART."

By LORD CURZON.

A FORTNIGHT ago we gave a brief synopsis of the recent report by a Committee of Trustees of the National Gallery appointed to inquire into the retention of important pictures in this country, and other matters connected with the National Art Collections. Among the appendices is the following memorandum on a proposed Society of "Friends of Art," by Lord Curzon:—

In considering by what means (either in supplement to or in place of additional support from the State) private generosity may be enlisted in the preservation of our National Art Treasures in this country, not very much help is to be derived from a study of the conditions of the various Societies that exist for this purpose in France (Amis du Louvre), Holland (Rembrandt Society) and Germany (Kaiser Friedrich Museums-Verein). They administer incomes that vary from £500 to £3,000 per annum. But their main achievements have been performed with sums raised outside of their annual and regular income, and in more than one case they act as moneylenders to the Government for the prompt purchase of works of art, the Government subsequently repaying the whole or the greater part of the money advanced. This is a plan that would not fit in easily with our system. The best features of these Societies have already been borrowed for our own National Art-Collections Fund, which, within its limits, has done much admirable work, but does not seem likely to experience a very great expansion. Its occasional efforts to raise very large sums have been crowned with wonderful success. But each successful exertion renders repetition more difficult, and it is hardly to be expected that even the zeal and influence of the powerful committee of the fund will avail to rescue many more famous masterpieces at the prices which such objects now command.

The National Art-Collections Fund ought to be encouraged by every conceivable means, and if, instead of a membership of 1,400 persons paying upwards of £1 1s. per annum each, it had 5,000, it might (quite apart from exceptional efforts) make a very important annual contribution towards the solution of the problem that we are discussing.

But the question that I wish to examine is whether we cannot supplement its labours, and relieve it of the periodical strain of raising very large sums, by some plan which shall organise the wealth of the wealthiest art patrons in our midst in a manner that will be constant, and not spasmodic, certain and not precarious, swift and not dilatory, in its operation.

Some of the foreign Societies possess a grade of founders or life-members, who obtain the special title by the contribution of sums varying from £250 to £2,000. These are probably rich men who would be willing to make the contribution in any case, irrespective of the title. A Society when first instituted admits readily of these grades or distinctions, for they are a part of the appeal that is made to public support. It is more difficult to graft such an addition on to a Society already existing, for questions are asked as to the reasons for the differentiation, and as to the advantages that may be expected in return for a different scale of subscription. I do not think, therefore, that a solution can be looked for in the present case by a development of existing institutions. If we desire to organise private patriotism and munificence on a much larger scale it must be by a new and independent effort.

The suggestions I make are:—

1. That a Society be founded entitled "The Friends (or Benefactors) of the National Gallery," or "The Friends (or Benefactors) of Art."

2. That it shall consist, if possible, of fifty members who will undertake to contribute a sum of £1,000 per annum (or if this be thought too large, £500 per annum) for a minimum of ten years. The larger donation would provide an income of £50,000, the smaller of £25,000 per annum. In practice, owing to delays in completing the list of members and in filling vacancies, the assured income would probably be somewhat less. (There is a similar class of benefactors of the Metropolitan Museum of New York who have given an individual lump donation of £10,000.)

3. That the King be invited to become Patron of this Society. (I regard royal patronage as essential to the success of the scheme, and if his Majesty, in the same way as he entertains annually the hierarchy of the world of sport—*i.e.*, the Jockey Club—could be persuaded to confer a similar honour on the Society of the Friends of Art, its prestige and distinction would be assured.)

4. That the Society be constituted in the first place from a list of names to be submitted to the Patron.

5. That its affairs be managed by a committee of six to nine persons, who should hold office for a period of, say, six years (two or three retiring every second or third year), and who should elect their own chairman. That a member be re-eligible to serve upon the committee after the expiration of one year.

6. That the first committee be nominated by the Patron (or, if thought preferable, be elected by the Society).

7. That vacancies on the committee as they occur be filled by the committee.

8. That invitations to join the Society be issued by the committee, with the consent of the Patron.

8B. That after the expiration of ten years a member who has completed his full term of subscriptions should pass into the grade of life-members, and retain all the privileges of membership except that of electing the committee, which will be reserved for those members who are still on the active or subscribing list.

9. That the members of the Society be permitted, subject to the consent of the Patron, to wear a special badge or button, which may be worn on any public or private occasion when decorations would ordinarily be worn.

10. That (if thought desirable) a list of the names of living members be printed on a board to be set up in one of the entrance lobbies to the National Gallery.

11. That such other privileges as may be found possible be conceded to members of the Society in the shape of admission to the National Collections free of charge on reserved days for themselves, their families and friends, and a free gift of any official publications (reports, handbooks, catalogues, &c.) issued by the authorities of the above collections. It might also be found practicable to obtain for them special facilities of admission to famous private collections.

12. That the annual income of the Society be not utilised for relieving the National Gallery of its present obligations in the purchase of pictures for the nation, but that it be generally regarded as a reserve to be employed in the purchase of special masterpieces, either by private negotiation from private collections or, when necessary, at auction or otherwise.

13. That every picture so purchased be labelled as having been presented by the Society.

14. That the Society, being a private society, should be at liberty to spend, or reserve, or accumulate its income as it pleases, and only to make such public statement of its proceedings as it may desire, the committee being responsible to the Patron and the members, and to no one else.

15. That in the administration of the fund the committee should maintain constant private communication with the trustees of the National Gallery, the committee of the National Art-Collections Fund, and other interested parties. (Indeed, I imagine that if any of the trustees of the National Gallery happened to be qualified as members of the Society—as would doubtless generally be the case—one at least of them would always be nominated a member of the committee of the Society, in which case he would act as a link of co-ordination between the two bodies.)

I think that the best moment for the constitution of such a Society, if the general idea be approved, is in the main a question of expediency. It may, perhaps, be argued that it would be well to wait until the Government has replied to any appeal for an increased grant that may be addressed to it, and that they might find in the institution of such a Society and fund an excuse for refusing further assistance from the State. On the other hand, it seems to be at least as likely that the Government might reply to a petition for an enhanced Government subsidy to the National Gallery that, the money so given being the contribution of the taxpayer at large, and therefore to a large extent of the poor, they would like to know if the wealthier classes—who are more proficient and perhaps more interested in art—are prepared to accept a corresponding sacrifice. In such a case the organisation of private means, in the manner described, might be an inducement rather than a deterrent to the Government to act with corresponding liberality.

Let me add, in case the plea be advanced that for large purposes and dramatic coups it will be safe to trust to the Government in the future to act as they have sometimes

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done (*e.g.*, in the case of the Ansidei Madonna) in the past—that I think this would be a most unwise and fallacious expectation. As the great masterpieces rise in value and as the House of Commons becomes more democratic, so will it be increasingly difficult to obtain the consent of the representatives of the working classes to an expenditure which some of them will be found to denounce as an abuse of the funds of the taxpayer, and as of interest only to a small section of the population of London. On the other hand, once an enhanced Government grant has been placed on the annual estimates as a matter of course, it is scarcely likely to be disputed or reduced when the votes in supply are taken in the House.

ART IN LONDON.

THE BEAUX-ARTS COMMITTEE.

IT was with a sense of disappointment that we encountered the small display of students' work on May 5 at the atelier in Wells Mews. Of the studies from the nude *he* and *she* we take no account here, for though such study is a valuable element, yet it is in itself not architectural. We bear in mind the fact that the personnel of the atelier has been lessened perceptibly by departures for the seat of war (there are already two fatalities to the credit of the brotherhood); but still, when we compare the numbers of those attending to hearken to the jury's criticisms with those who submitted work for such criticism, the result was poor.

And what of the quality of the work? This, too, was rather depressing as a whole, though here and there was work of superior mark. For the monthly study (the design for a mausoleum for the glorious dead) only four schemes were submitted. This is one of the infrequent instances where the effect of planning admits of æsthetic consideration—but only to a limited degree, in this respect differing from flower-bed design. In this competition two students were, as we consider successful and two were failures. Taken all in all, Mr. A. Turner was rightly placed first by the jury, for a scholarly plan and elevational treatment; but he failed in the very flat saucer "dome," whose outline would be completely lost from ground inspection and perspective view. The jury mercifully gave the benefit of a doubt as to the esquisse accompanying the rendu; otherwise the verdict "Hors concours" must have been pronounced for the total change of elevational treatment. Mr. Percival M. Ware, A.R.I.B.A (whom the jury placed last) deserved, in our view, to rank second; he submitted a masterly treatment, with the approach to the museum somewhat inferior to Mr. Turner's. The enormous piers carrying the dome would benefit by being pierced with arched openings. The saucer-dome was good, and so was the whole general effect, but in general it was more commonplace than Mr. Turner's. Mr. A. S. Taylor's plan was not very dissimilar to Mr. Ware's, except that the museum was made an isolated building, which was a fatal misconception. Mr. E. R. Jarratt had a commonplace plan and an utterly false dome; the principle adopted in St. Paul's Cathedral of different contours for the dome within and without, though permissible there, is not desirable for imitation in a small building. The twelve-hour studies for a Caryatid doorway were not satisfactory, but we regard Mr. L. H. Bucknell's as the best, seconded by Mr. A. B. Hamilton's; that we differed from the findings of the jury leaves our withers unwrung. The other twelve-hour study for a library in a large house produced five schemes—a poor one from Mr. J. H. Wardrop, an indifferent one from Mr. Turner, and an anæmic one from Mr. J. H. Edgecumbe. We believe that we fall into line with the jury in ranking Mr. A. B. Hamilton first and Mr. P. H. Meldrum as second, though the latter's wood-panelled plinth book-cupboards were better than the glazed treatment by Mr. Hamilton. On a future occasion we trust that neither a deplorable war nor an epidemic of ill-health will be responsible for a meagre show of work.

THE directors of the London and Lancashire Fire Insurance Company have decided to present to the Liverpool Civic Service League, in honour of the members of their staff who have joined His Majesty's Forces, a fully-equipped motor ambulance for the conveyance of the wounded soldiers to hospitals in the Liverpool area.

SOME FUTURE DEVELOPMENTS IN HEATING AND VENTILATION.*

By A. H. BARKER, Wh.Sc., B.A., B.Sc.

IT is somewhat surprising, in view of the immense importance to mankind of the twin sciences of heating and ventilation, that the amount of attention hitherto paid to the scientific aspects of these subjects, both on the part of the scientific man and of the engineer, should have been so small. The subject, indeed, is hardly seriously regarded as capable of scientific treatment by the average engineer, who probably looks on it as a branch of plumbing or building, calling for a certain knowledge of rule of thumb and a certain amount of practical experience, but at the same time hardly a fit subject for the scientific engineer. Although the science of this subject is yet in its infancy, the author is anxious to secure a more just recognition of its position as a serious branch of engineering, and takes this opportunity to explain to his brother engineers how and why this view is a totally erroneous one, and to discuss the general nature of some of the problems yet unsolved. It may safely be said that there are more unexplored problems of science and greater difficulties attending their solution in the case of heating and ventilating than in almost any other branch of the profession, and the author has had some experience of a good many. In Germany, that uninspired land of detail, where the minutiæ of the subject have been thrashed out with a meticulous care which seems to us to be almost absurd, the real essence has been entirely missed.

This erroneous view of the science as a mere matter of rule of thumb has been fostered in the past by the extremely unscientific manner in which the subject has been treated by writers of technical books in America and England. Any educated engineer studying some of this literature must be driven to the conclusion that there is really no science whatever in the subject.

The reasons why it has failed hitherto to come up to the standard attained in other branches of engineering are not difficult to understand. They are the immense complexity of the factors which go to make up any given result, the difficulty of defining in terms of exact science what that result is or should be, the fact that the criterion of success up to the present has, of necessity, been the feelings of individuals rather than the readings of scientific instruments. Added to these is the immense power of adaptability of the human organism to varying conditions, which tends to make actual variations of conditions appear unimportant in practice. The circumstance which differentiates this branch of engineering from almost all others and at the same time introduces difficulties unknown in all other branches is that we have here to take account of the variable human factor, both as to its physiology and its pyschology, as an essential part of the problem. In this sense we trench on the domain of the physiologist and hygienist to a degree unknown in any other branch.

It is easy to understand that this combination of difficulties tempts the busy practical man to be satisfied with any sort of result, and to leave to nature the task of adapting the organism of the sufferer to the conditions produced by the engineer—a task which she can often accomplish, but often not without injury to the individual. The present lack of exact knowledge makes it difficult or impossible to hold the practical man to any precise standard of accomplishment. In other words, the practical man can get along somehow, with a very small modicum of knowledge. It is the general attempt to do so which has led to the undoubted state of discredit in which this branch finds itself to-day.

All engineering is merely glorified common sense. The training of an engineer leads him to try to deal in a common-sense way with objective facts as he finds them. In this branch the first obstacle is the great difficulty of finding what are the facts.

Consider, for instance, the first problem which would meet a scientific engineer endeavouring, without previous experience, to arrange a satisfactory scheme of ventilation for a building. He would commence with the assumption that the artificial ventilation of a building consists in forcing in a calculated volume of air, a task which, if he were familiar with fans and the laws of the flow of air in ducts, he might think he could easily accomplish. After he had made one attempt to satisfy the occupants of the

* Extracts from a Paper read before the Society of Engineers on May 11.

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building by proceeding on the assumption that this is the only requirement, he would find out that one essential factor in the problem was to study the distribution of the air currents in the building itself.

Even in a small building, this is in itself a problem of very great difficulty. Although each one of these currents obeys laws of nature as rigidly accurate as any other laws of nature, yet the number of influences having an effect on the air currents is so enormous that the complexity of the result is almost immeasurable. In the attempt to lay down in terms of exact science the laws which govern this result, any person might well be baffled and unable to trace with any clearness the operations of any law at all. The reason is, of course, not that the law is not there, but that it is so complex that it would take almost a superhuman intellect to analyse it completely.

Further, who can say what system of air currents in a room—say a theatre—is to be aimed at? We all know that complaints of the ventilation of almost every public room are universal. Yet there is no general agreement, either what is wrong or what is needed to put it right. How is it possible to hold the ventilating engineer responsible for a poor result when no one can specify what the result ought to be?

I have made reference to the complexity of only one of the constituents of ventilation. Those of heating are no less complex. We have two totally distinct forms in which heat is delivered into the room—namely, convection currents of heated air and radiant energy. These are as distinct from one another as light is distinct from sound. Yet, up to the present, no formal recognition of their entire separation from one another has been recognised in current literature. The cause for this is easily seen to be that, different as these two forms of what for convenience we call heat are from one another, yet they can be instantaneously transformed from one to the other and back again. Their measurement, again, is not a problem to be easily solved. No sooner does one measure the amount of radiant energy than the mere act of measuring it turns it, or part of it, into convected heat.

The difficulty, however, which is the most baffling in the attempt to reduce this subject to an ordered science is the fact that the object of both heating and ventilation, though primarily physiological, is also to some extent psychological. The primary object is to keep the inhabited rooms healthy; of almost equal importance is the necessity to keep them comfortable. The effect of any given condition on the human body is, if possible, more complicated than the laws which govern air currents and heat flow. The physiologist cannot yet tell us in exact terms what are healthy conditions for inhabited rooms. He can give us generalities only, and the experiments on which even these generalities are based are far from convincing. He cannot even, for instance, tell us what is a healthy temperature for human beings to live in, nor does he seem to realise that when he speaks of "the temperature of a room" he means merely the temperature of a thermometer suspended in the room.

Some physiologists say (and the author agrees) it is desirable in the interests of health that the temperature maintained should be as low as a human being can endure without real discomfort. Yet others will say this is nonsense, that the room should be so warm that the man feels comfortable without any effort. Neither can anyone tell us within 300 per cent. how much fresh air per head per hour is the minimum consistent with health. Indeed, as a fact, such a crude statement would have no meaning in the real science of the subject. It depends on the temperature, humidity, and a score of other things. Physiologists cannot agree as to the chemical nature of healthy and unhealthy air. Books on the subject of climate do not give any explanation of what physical conditions constitute a bracing or relaxing climate. Indeed, most of the hygienists do not seem to realise that such words need any further description.

The matter is yet more complicated when we consider that one object the heating engineer has in view is to make persons comfortable. We here come across the baffling fact that a man is comfortable when he thinks he is comfortable. If we can make him imagine he is comfortable without the alteration of any single condition, we can make him feel comfortable. Make a man imagine he is cold or feels a draught, and he will at once want to shut all the windows. Convince him, on the other hand, that to shut the windows is unhealthy and stuffy, and the same man will not be comfortable unless the windows are open. One can train oneself to feel comfortable in anything.

In further illustration the author will refer to a psychological experiment he made on a medical man who was a guest at his house some years ago.

We were sitting in a room which had a thermometer suspended on the wall. The visitor made some remark about a "shoemaker's wife" and complained of the room being cold. It was freezing outside: the thermometer on the wall read 54 deg., and was a correct one. The author's view is that such a thermometer reading is quite consistent with health and comfort, when it is freezing outside. We fell to a discussion of temperatures, and it was suggested, as an experiment, that the temperature of the room should be gradually raised until the guest felt comfortable, to ascertain whether he found a temperature of 60 deg. too high. The room was provided with a fairly powerful heating apparatus. The author went into the cellar, pretended to stoke up the boiler, and to turn the radiator full on. As a fact, nothing was done either to the boiler or the radiator, though the doctor was allowed to hear the clattering of the fire-doors and fire-irons. After a short interval the thermometer was changed unobserved by the visitor for another precisely similar in appearance which read 6 deg. too high. When it had been placed on the hook without his seeing the change, it was shown to him, and he was asked whether that temperature made him more comfortable. He said the temperature was then just right for him, neither too hot nor too cold, although the real thermometer reading was precisely the same as it had been in the earlier part of the evening. That little experiment is most illuminating as showing the extraordinary difficulties attending an attempt to treat this subject scientifically.

It is an undeniable fact that a room filled with air which, so far as chemical analysis can detect, is absolutely pure may feel very stuffy. For instance, in the House of Commons, on the ventilation of which the author has experimented for many months for the Committee of the House, the air in the Debating Chamber is, chemically speaking, as pure as in any room in the world. Fresh air simply pours into it in extravagant volumes. In a moderately full house there are no less than 13,000 cubic feet of air supplied per head per hour. Yet it produces, without any possible doubt, the effects which we are accustomed to think of as associated with defective ventilation—lassitude, sleepiness, infection, and so forth. Complaints are loud and quite general.

A room may, on the contrary, feel fresh and sweet in which, judged by chemical standards, the air is very bad. The author has analysed air containing 25 volumes per 10,000 of CO_2 which felt as fresh as a spring morning, although 10 volumes is regarded as the extreme allowable impurity in current science. There must be some combination of chemical or physical conditions which accounts for the effect so far as it is objective—when it is purely subjective, of course, it is impossible to analyse the effect. Nobody up to the present has ventured to specify what is that combination.

Now the future of the sciences of heating and ventilation depends, on the scientific side, on the further analysis of the conditions which produce the feeling of comfort and other effects. On the practical side they consist of the application of those discoveries so as to bring under control each of the conditions, and on the further developments of economy of construction and transmission and the better control of the forces we bring into play. Before we can get a step further we must be able to express, in exact terms, each of the chemical and physical conditions which go to make up the sum total of the room condition.

The criterion of our success, as I have said, is, and must be, the effect on the feelings of an individual. But we must, in order to give this subject a scientific basis, be able to translate the feelings of an individual into terms of measurable physical conditions, and this is our first difficulty. We may lay down certain physical conditions which we conceive to be necessary to the production of comfort and health, and we may direct all our attention towards producing those conditions. We may succeed completely in doing so, and find that when we have done it that some individuals will find that those conditions are not such as are necessary for their personal comfort. We may then get other bases to work upon and still find that the new bases themselves are not any more suitable than the first.

It is clear that the only legitimate function of the

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engineer as such is to produce and control certain specified conditions. The criterion of his success must not be the self-contradictory feelings of the occupants of a building, but they must be the exact readings of well-defined measuring instruments, such as radiometers, hygrometers, air meters of various kinds, apparatus for the analysis of air, dust counters, thermometers, and other instruments.

The other half of the problem is for the physiologist and the hygienist—viz., to specify what are the conditions which will be regarded as healthy and comfortable. It involves essentially experiments on human beings which are in their very nature illusory and extremely difficult. In essence they are, in reality, so many attempts to calibrate human beings. The science of the subject is only in its infancy as yet. Future developments depend on the analysis of these problems to no small an extent.

Let us consider first the problems of heating stated in general terms. The practical problem before the engineer is to introduce heat into a building in such quantity and in such form as to make the building comfortable. It will be evident that as heat can be introduced in two different forms—namely, by convection currents and by radiation—there will be at least two corresponding conditions as to temperature in a room which must be observed by the heating engineer. The very existence of these two conditions has received no recognition in any of the classical literature on the subject. Indeed, as has been previously remarked, it does not seem generally to be clearly understood what is the meaning of the expression "temperature of a room."

This expression is commonly understood to mean the reading of a correct thermometer suspended in the room. Now a thermometer suspended in a room does not indicate the temperature of the air surrounding it. It is also largely influenced by the amount of radiant energy impinging on the bulb, which has no connection with the air temperature. For instance, one sees in the winter-time the caretaker of the tools used in road-mending operations seated in a sentry-box before a coke fire quite comfortably, although the air surrounding the fire on all sides is sometimes far below freezing-point. A thermometer suspended near the fire will obviously read fairly high, although the temperature of the air surrounding it on all hands may be far below freezing-point. It is well known that the radiation passes through the air without warming it. This is an extreme example of this phenomenon, but it brings clearly into prominence the fact that a thermometer indicates its own temperature only when it is hung up in a room. It clearly does not necessarily indicate the temperature of the surrounding air, neither does the reading of a thermometer form any reliable guide to the feeling of cold or warmth in a room or out of doors. The problem has been treated in the past as though all that was necessary was to introduce heat in any form sufficient in quantity to cause a thermometer suspended in the room to read a certain figure—say 60° or 65° F. There is no problem at all in that—anybody can do it. One can procure a radiator of suitable size, which is easy enough to calculate, and a suitable boiler, connect up with piping, and there you are! It is true that there is a very great deal of calculation involved in so designing a large system of pipes that the flow to all parts of the apparatus shall be uniform and proportional. But even when this is done there are undoubtedly a great and increasing number of persons who say they cannot endure what they call "apparatus heat" in any shape. They cannot say why—and very few people can tell them why. Theories that the heat is a "dry heat" are absurd. Radiator heat is no more dry than any other form of heat. The heating engineer says: "There is your thermometer reading 60°—a beautiful moderate temperature—what more do you want?" The man says, in effect, "I do not know what I do want, but I do not want to be stifled and I do not want to be cold. Can you not give me heat which keeps me warm without choking me?"

Now, that is a very real problem of which we must get to the bottom. Why is it that radiator heat is so distasteful to many persons? How far do imagination or psychological influences account for it? Obviously a careful analysis of room conditions must involve an investigation of all these matters.

It is evident that the first thing which should be analysed in the endeavour to arrive at the actual temperature conditions of a room is both what is the temperature of the air itself and what is the temperature corresponding to the radiant condition. The author has introduced a conception which he has named the "radiant temperature." The idea of it is the temperature which a thermometer would register if there were no air in the room at all—a sort of mean of the temperature of the surrounding walls.

As an illustration, consider the following: In an ice cave in a glacier in Switzerland or elsewhere, on a very hot day, the radiant temperature in the cave is obviously 32° F., but the air temperature near the mouth of the cave will exceed 70° F., yet a thermometer at this point might probably read 56°.

Or again, conceive a room heated on a cold day by blowing hot air into it. Here it is evident that the hot air is the sole source of all the heat supplied to the cold walls. The air must therefore be hotter than the walls. The radiant temperature must be lower than that of the air.

On the other hand, when a man keeps warm while sitting in the cold open air in front of a coke-fire devil, the radiant temperature must be higher than that of the air.

What is the nature of the physical effect of these two different conditions on the human body, and what is the effect on the sensations? Please note that the physical effect is a different thing from the sensations produced. It is necessary to investigate both. How far does the difference account for the complaints we hear of the stuffiness of radiator heat or of the lassitude produced by the plenum system. How far is either related to the rate of heat loss from the body of a human being? Does that rate of heat loss absolutely condition the degree of comfort experienced? If not, what other effect is there?

To make a systematic beginning of unravelling this tangle of questions we must first develop experimental means for recognising and measuring the four different quantities, air temperature, radiant temperature, quantity of convected heat, and quantity of radiant energy.

Even before this is done it is necessary to determine experimentally what is the relation between the thermometer reading, the air temperature, and the radiant temperature. An extended investigation on this point has been made at the University College. We have also devised two instruments for separating the air temperature and the radiant temperature. They are far from being ideal instruments for the purpose, as they are both expensive and difficult and very tedious to manipulate. Something of a much simpler character will be necessary before we can say that this problem has been satisfactorily solved in a practical manner.

The author claims to have proved by the aid of these instruments that the stuffy feeling which is often associated with systems of central heating is due largely, but not entirely, to the fact that the air temperature is too high and the radiant temperature too low. On the other hand, the freshness of a building depends on keeping the air temperature relatively low and the radiant temperature high.

It is fundamentally for this reason that a room warmed by an open fire is by many sensitive persons often felt to be much more comfortable than a room heated by a radiator. It is not necessarily due to the fact that the ventilation produced is more liberal except in so far as a continual inflow of cold air into a room tends to keep the air temperature low. If, for instance, we have in a room at the same time some means, such as an electrical stove, for generating a good deal of radiant energy, and at the same time in the room a coil supplied with a circulation of cold brine for keeping the air cool, we should get in the room conditions in some respects similar to those obtained by a warm fire and an inflow of cold air. It is the temperature and humidity of the air which are the important points, and not its chemical freshness or freedom from CO_2 or other organic products.

Dr. Leonard Hill has shown by experiment that physiologically speaking the chemical composition of the air has within wide limits no effects whatever on the human organism, and the author's experiments bear out that fact from another point of view. Dr. Hill believes that the effect of ventilation is so largely a question of the rate at which heat is abstracted from the human body that all other effects combined are of comparatively small importance. He has devised two instruments to determine this rate of heat loss in any conditions.

If Dr. Hill's view is correct, the indications of these instruments are practically all that is necessary to determine whether the point at which they are placed is in a

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satisfactory condition as regards ventilation. The author believes that, though this rate of heat-loss is no doubt of very great importance, yet there are many other conditions almost equally so. One of the chief is the way in which this surplus heat is abstracted. According to this view the proportion of the heat which is abstracted by contact of cold air with the body is of vital importance to the nervous sensations produced. It causes a great difference in effect whether the heat is abstracted by radiation or by contact of cold air. This, again, is a problem of combined engineering and physiology which calls for a most difficult investigation.

In connection with this investigation it is obviously very important to be able to separate the amount of heat communicated to a room as radiant energy from that as communicated by warming the air. We have designed and erected at the University College an apparatus for this purpose.

It will be understood that the above determinations (which are only a small part of the problems confronting the heating engineer) have had reference only to the measurement of the physical conditions of a room. They do not touch the question of the effect of these varying physical conditions on the body or the sensations of a person subjected to them. That is an aspect of the matter which, as has been said above, cannot be adequately treated by the engineer. It is essentially a problem of experimental physiology.

It will be evident also that the problems of heating and ventilation are closely associated. We cannot even consider problems of heating without simultaneously considering those of ventilation. We have, for instance, to consider the effect on the human organism of warm air and cold air. In this connection some very interesting experiments have been made by Dr. Leonard Hill, in which he has studied the difference in the effect on the organs of the body of hot and cold air by actually inspecting those organs by optical instruments under different air conditions.

A further important point in connection with ventilation is to determine the effect on the human organism of different quantities of dust in the air. The investigation of such a matter naturally imposes on us the necessity of determining with some accuracy how many particles of dust do exist in a particular sample of air. As this number runs into millions per cubic inch, it will be evident that very special methods are required for counting them. The "Aitken" dust-counter effects this, being based on the principle of measuring off a certain minute sample of air and diluting it largely with a measured quantity of pure and dustless air. A certain fraction of this enlarged volume is measured off. The whole of the particles of dust in this fraction are deposited on a glass plate underneath a microscope, and a measured fraction of these particles is actually counted. By multiplying up the total number in a cubic inch the original sample can be calculated. The method by which the particles of dust are deposited is to surround each with a globule of condensed moisture, which so adds to the weight of the particle that it sinks and adheres to the plate.

The measurement of the dust particles is clearly only one side of the problem. We have also to measure the effect of different degrees of dustiness on the human organism. That is obviously a matter of great difficulty and concerns the physiologist, and is more appropriate to the physiological than to the engineering laboratory.

In no respect has the science of heating and ventilation been more backward than in the knowledge of laws governing the movements of air. If we compare, for instance, what is known of the laws of electrical currents with the corresponding laws of pneumatic flow, we shall see that in the one case the knowledge is, for practical purposes, complete and definite, enabling calculations to be made with the utmost precision and, what is more important, enabling the results of the calculations to be carried out in practice.

Pneumatic matters, on the other hand, have been treated with almost a casual indifference by the engineer. One reason for this is no doubt the fact that the effects of electrical flow can be exactly and precisely traced by self-contained instruments, often or generally of direct reading type. The flow of air, on the other hand, is not only extremely difficult to measure, but also very erratic. Further, it is not so vitally important to be able to measure with close accuracy the flow of air as is the case with electricity. No man will be suffocated if he gets 10 per cent. less air than was calculated. It would, indeed, be very difficult to show, experimentally, within 10 per cent. how much air he was actually receiving. But if a dynamo gave 10 per cent. less electrical power than was calculated on there would be trouble. It would be quite easy to show that the maker of the dynamo had failed in his undertaking.

The flow of air is brought about by the operation of very trifling momentary causes constantly varying. So, no doubt, is the flow of electricity in relatively large quantities at low voltages. The ventilating engineer is concerned with a comparatively large flow of air at very low differences of potential. The problem is comparable with the investigation of the flow of electrical currents in a large mass of metal. If, for instance, we take a cube of copper measuring 3 feet in every direction, the electrician would find very great difficulty in investigating the electrical currents throughout the mass. Some local circuits would no doubt be set up by any accidental distribution of electro-motive force, such as those set up by the movements of a magnet in the neighbourhood. This exactly corresponds to the problem with which the ventilating engineer is confronted in ventilating a building. Air is introduced, for instance, into a room at a certain point. At other points in the room, sometimes near, sometimes remote from the point at which the air is introduced, currents of air are experienced which the occupants of the room call "draughts," which may or may not have something to do with the manner of its introduction. It is held up as a reproach to the ventilating engineer that these draughts exist, and so no doubt it is. He is told that he does not understand his business, because these draughts seem to be erratic, and that he cannot exactly control them. Yet the laws of pneumatics, little as they have been studied, are quite as definite as are those of electricity. The difficulty is that the conditions are so difficult to gauge and to control. The laws of pneumatic resistance have been put forward by the investigators in such a form that they are somewhat difficult to grasp by the comparatively non-mathematical mind of the engineer.

We are making an effort at the University College in the Department of Heating and Ventilating Engineering to develop experimentally the laws of pneumatics on a somewhat similar basis to those of electricity as first suggested, the author believes, by Dr. Shaw.

The great importance of this method to the practical engineer will be at once obvious. If, for instance, we can specify the proper resistance in pneumatic units for a boiler flue and chimney, we shall be in a position to deal on a rational basis with the much vexed problem of chimney shafts, which problem has only been treated in the most incomplete and perfunctory manner up to the present. We can determine by the application of these rules what is the actual resistance of a boiler flue, and are able to tell exactly what is the maximum capacity of a plant in heat units, or in pounds of steam, even without lighting the fire in the boiler.

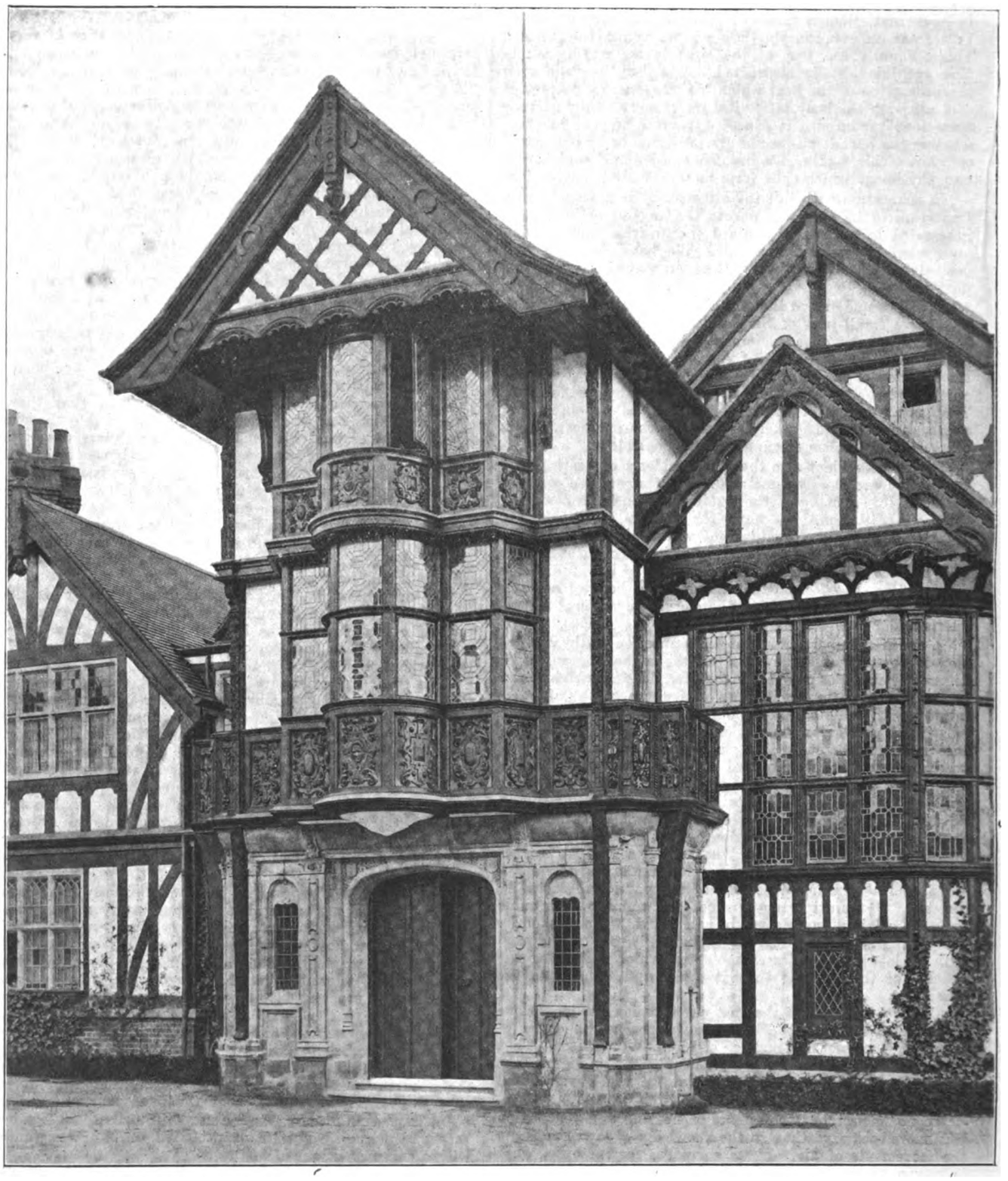
The method by which this is done is exactly analogous to the potential method of determining battery resistance—namely, by introducing into the battery circuit a number of different resistances which can be exactly measured and observing the currents produced in each case. To apply this method to the determination of the resistance of boiler flues and chimney shaft it is only necessary to adapt a fan to the air inlet to the boiler through a chamber in which a constant low pressure of air can be maintained. An adjustable resistance between the fan and the boiler inlet is then altered and the current measured in several cases from which the pneumatic resistance can be at once established. It is easy to show, for instance, that the total resistance of a plant consisting of, say, three Lancashire boilers, 28 feet by 7 feet 6 inches, should be about .00172 units of resistance with a chimney height of 100 feet.

It is even possible to determine the value of the resistance without a fan, without even an anemometer, but having a very accurate micrometer pressure gauge.

We have applied the same system in practice to a number of other important determinations. We have found, for instance, the relative resistance of different types of ventilating gratings and flues of different radius and shape. The method, indeed, is capable of very wide extension.

This paper has dealt sketchily, and possibly very inadequately, with a few only of the multitudes of problems with which the real science of heating and ventilating engineering is concerned. Enough has been said to show to engineers that there is a good deal more in this subject than such a collection of mere rough rules of thumb as are to be found in the current literature, and that the subject is well worthy of taking its place among the most difficult of practical science. It is largely because scientific engineers have not hitherto taken this subject seriously that it is in a very backward state. It is at the present time in something like the condition that mechanical science was in at the time of

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"PETWOOD," LINCOLNSHIRE.—PART OF ENTRANCE FRONT.—Mr. Frank Peck, A.R.I.B.A., Architect.

Newton, or electrical science at the time of Faraday. It would be very much to the advantage of mankind if engineers would take the subject more seriously.

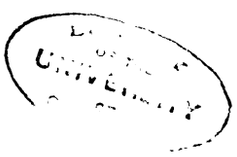
OAK FLOORING IN A KINGSWAY BUILDING.

At the Royal Courts of Justice on Friday, Mr. Muir Mackenzie, Official Referee, after a hearing of seven days, concluded the case of the Complete Wood Flooring Company, Ltd., *v.* King & Arnell, Ltd. It was a claim by the plaintiff Flooring Company, of Trinity Square, E.C., to recover from Messrs. King & Arnell, builders and contractors, of West End Lane, Hampstead, the sum of £536 10*s.* 2*d.*, balance of account for certain oak floors at West Africa House, Kingsway. The defendants counter-claimed for rescission of the contract, and the return of £250 paid in respect of it. They further counter-claimed for £36 as loss through hindrance in the execution of other parts of the general contract, and £22 for loss owing to inability to secure payment for the floors or any part of the general contract. In the alternative, and whilst denying liability, defendants brought into court £386 10*s.*, which they said was sufficient to satisfy the claim.

Mr. E. F. Lever and Mr. S. P. Kerr were counsel for the plaintiffs, while Mr. Frank G. Enness appeared for the defendants.

Plaintiffs' case was that in accordance with contract they laid certain oak floors at West Africa House, which had been built by the defendants, and, having done the work, were entitled to their money. They submitted that English oak was a difficult wood to deal with when cut

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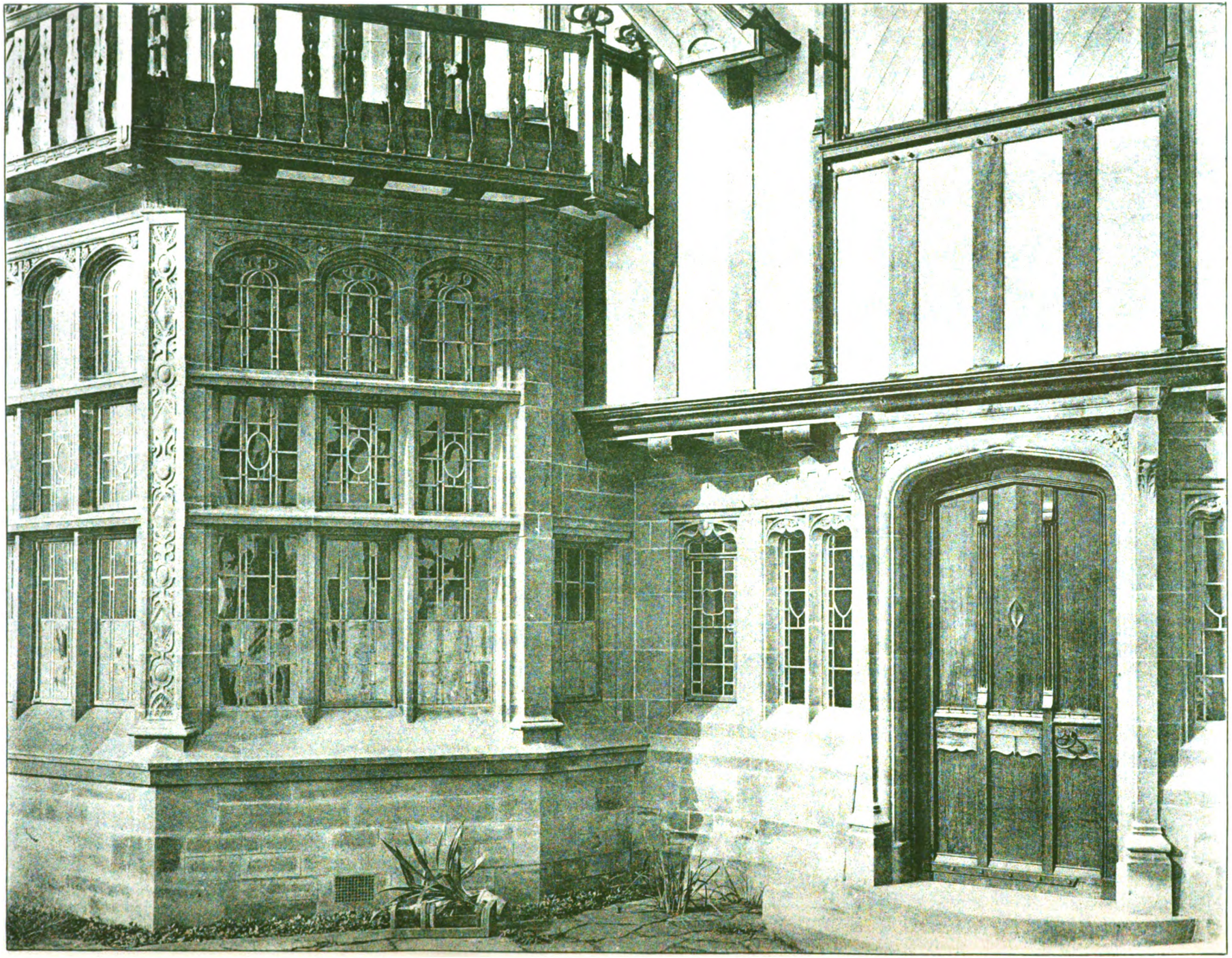
PETWOOD, LINCOLNSHIRE.- HALL AND STAIRCASE.

Mr. FRANK PECK, A.R.I.B.A., Architect.

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PETWOOD, LINCOLNSHIRE.—GARDEN ENTRANCE.

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PETWOOD, LINCOLNSHIRE.— S.W. VIEW.

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PETWOOD, LINCOLNSHIRE.—OAK ROOM. LOOKING S.E.

MR. FRANK PECK, A.R.I.B.A., Architect.

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PETWOOD, LINCOLNSHIRE.—FRONT ENTRANCE.

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PETWOOD, LINCOLNSHIRE.—STAIRCASE LANDING

Mr. FRANK PECK, A.R.I.B.A., Architect.

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into small blocks, such as were required in this job, because of its peculiar fibrous construction. The fibres became loosened, and there was curling and shrinkage. Considerable care was necessary in the preparation of the blocks, and such care was bestowed upon the particular wood employed in these floors. Nevertheless, through the nature of the wood, the difficulties indicated presented themselves, but plaintiffs readily made what alterations and improvements were necessary, besides "cramping" the floors, and they contended that the floors were eventually accepted by the architects. Much evidence was given in support of their case, and among the witnesses were Mr. Macintosh, a director of the firm, and Mr. Howard, jun., who superintended the preparation of the blocks. It was admitted that some of the oak used had been freshly cut, and Mr. Howard said in cross-examination that it was a new experience for the firm to supply English oak for floors.

It was submitted by the defendants that plaintiffs, instead of using only English oak, had introduced a certain quantity of foreign oak. The Flooring Company admitted using some Austrian and Dantzic oak, but declared this was more costly than English oak, and superior to the latter for flooring purposes. They further contended that the result in this direction was so satisfactory that the foreign oak was approved by the defendants and accepted. This, however, was denied, and an expert, called by the defendants, said English oak was more expensive and better than foreign oak.

Mr. Herbert King, of Messrs. King & Arnell, Ltd., who have recently erected several large buildings in Kingsway, stated, in evidence, that it was at the special request of the building owners that English oak was specified, and, while admitting that the floors with the Austrian joints were tight, though they did not constitute a properly laid surface, said English oak was always considered to be superior to any other oak, because the wood was tougher and of coarser grain. Much of the oak used on the job was not properly desiccated, and it was fresh, damp, and unseasoned. The contract provided that 75 per cent. of the oak should be of figured grain, but not more than 10 or 15 per cent. was figured. It was also provided that the floor should be of a thickness of an inch, but so much planing had been necessary that in parts it was considerably less. The work was to be completed within three weeks. The architects, Messrs. Trehearne & Norman, refused to accept the floors, and in the middle of May last, when the occupiers wanted to go into the building, the floors were very uneven and there were great gaps in them. Mr. Norman condemned the whole thing, "lock, stock, and barrel." Subsequently defendants wrote to the Flooring Company that without prejudice to what they had already written they had prevailed upon their clients to give plaintiffs an opportunity of remedying the work. Before the plaintiffs had represented that they could and would put each of the floors right. At the end of August he believed they had another try to put the floors right At an interview in October Mr. Norman offered to accept the floors if plaintiffs made an allowance of £250. Mr. Kirby said, "No, we have done the work and we want our money."

In cross-examination, Mr. King said his firm had not interfered with the floors. A floor of seven-eighths of an inch was generally accepted as an inch floor. In different places one-eighth of an inch had been planed off. Plaintiffs removed a good many sappy blocks when he drew attention to them. There were still many open-heading joints—in fact, there were open joints in every room, and he did not know one room that was passable.

Mr. Charles Frederick Norman, of Messrs. Trehearne & Norman, architects, stated that his clients said English oak was the only oak they would have. The first defects he noticed were sappy blocks and open-heading joints. Later he found that the blocks were shrinking, curling, and getting very uneven. From the first he complained. There was no figure on a lot of blocks. Subsequently witness conveyed a suggestion of his clients to the plaintiffs that they should have the floors wax-polished, with a view to making them presentable. Witness did not say that in return he would accept the floors; at the same time he told Mr. Macintosh that in his own interest it was the only thing to do. The floors were wax-polished, but in any event witness would not have passed them before the six months' guarantee contained in the contract had expired, and he had not accepted them up to the present time.

Plaintiffs submitted that the openings at present in existence were caused by lateral pressure, which they were prepared to rectify.

The Official Referee, who viewed the floors during the hearing, reserved judgment.

Delivering judgment on Tuesday, Mr. Muir Mackenzie observed, with reference to the non-completion of the contract within the specified period of three weeks, that the time originally fixed for the commencement of the work was altered, and he thought he ought to hold that plaintiffs had not committed any breach of the contract in that respect. Did the fact that the floors had been allowed to remain in the building and that the building had been occupied by the tenants amount to acceptance of the floors and dispensation, in fact, of performance of the contract? In the Official Referee's opinion defendants could not be held to have accepted the work or to have entered into any implied obligation to pay for it as laid—either contract price less deductions, or for measure and value of the work as laid. If the only matter of complaint had been as to some of the blocks, their size and shrinkage, the effect would have been different. He felt it his duty to decide that plaintiffs were not entitled to payment either on the ground that the contract was completed or on the ground that the performance was dispensed with on conditions or on the ground that they were entitled to be paid. As to the arrangement plaintiffs set up that they were entitled to be paid in consideration of their preparing the floors for the polishers, the arrangement was said to have been made by Mr. Norman with a representative of the plaintiffs. Mr. Norman denied he made any such arrangement, and the Official Referee could not finally prove he did so, or that Mr. Norman had any authority to make such an arrangement to bind the defendants by it. The whole contract of the parties subsequent to May 1914, in effect, contradicted the suggestion of any such arrangement having been made, and, indeed, if Mr. Norman had accepted the floors as they stood, it seemed to the Official Referee almost inconceivable he would afterwards refuse to certify so that defendants might get payment for the floors from the building owners—Messrs. Miller. He therefore decided that plaintiffs were not entitled to recover. As to defendants' counter-claim, his opinion was that they were not entitled to recover the £250 which was paid during the course of the work, and there was not sufficient evidence to support defendants' claims for other items of damage. He therefore dismissed the counter-claim. He thought it possibly might be of some service to add that if the Court, under whose orders he was trying the case, while reviewing his decision, held he was in error, and that there was an acceptance of the work entitling plaintiffs to be paid substantially upon one principle or another the value of the work laid, he saw no reason why the estimate of the architect should not be accepted, and £250 ought to be the deduction from the contract price, which would entitle plaintiffs to £286 10*s.* 2*d.* out of the money in Court. That, of course, would not substantially affect the great majority of the costs. He directed that judgment be entered for defendants with costs, dismissing the counter-claim without costs, and ordering the money paid into Court to be returned to the defendants.

Mr. Lever (for plaintiffs): I ask for a stay of execution as to costs, or that they shall be paid on the usual undertaking.

The Official Referee: I think they should be paid on the usual undertaking.

BRITISH INDUSTRIES FAIR.

THIS Fair at the Agricultural Hall, Islington, which has been organised by the Commercial Intelligence Department of the Board of Trade, although nothing like the great Leipzig Fair to which it has been likened, will have served its purpose by bringing together the manufacturer and merchant.

For the architect and builder there is not much of interest exhibited. Firms like Doulton and Wedgwood have exhibits, and the examples exhibited are far in advance of any German production we remember seeing.

Messrs. Carter & Co., of Poole, and the Leeds Fireclay Company are showing some excellent ceramic ware, and the tiles exhibited by Messrs. Carter were particularly pleasing.

In glassware, Messrs. Chance Brothers are showing specimens of their rolled sheet glass and glass for lighting

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Birmingham.—Halesowen Grammar School, Wolseley Motor Works, Barnsley Hall Asylum, Bromsgrove.
Broadmoor.—Criminal Lunatic Asylum.
Barnsley.—Workhouse; Infirmary; Baths and 8 Council Schools.
Brighouse.—Clifton Church.
Chester.—Town Hall.
Chadderton.—Town Hall.
Derbyshire.—Darley Dale, St. Elphin School.
Glasgow.—Blythwood Hotel; Masonic Halls, Rutland Crescent; City Bakeries, Ltd.; Salvation Army, Bath Street; Imperial Tobacco Co., Tobago Street; Port Dundas Distilleries; John Miller, Ltd., Printers, 322-334 St. George's Road; Kilmun Seaside Homes.
Leeds.—Town Hall; Municipal Buildings; Pearl Buildings; Market Hotel; Meadow Lane and Marsh Lane Police Stations; Kirkstall Road Baths; Free Libraries; Eldon Chapel; Beeston and Hunslet Wesleyan Chapels; Sion Chapel, Skinner Lane; Small Pox Hospital, Killenbeck.
Liverpool.—"Meccano" Works; Grove Hotel, Wallasey; Mariners' Home; Merchant Taylors' School; Majestic Picturedrome; Synagogue, Princess Road; Tivoli Theatre and Café; Penrhyn Street Council School; Rice Lane Model Council School, Hope Street Technical School, Clarence Street Secondary School.
Manchester and District.—Victoria Hotel, First-class Dining Rooms, Central Station; Lake Hotel, Belle Vue; Kardomah Café, St. Anne's Square; St. Wilfred's Church, Hulme; Nursing Home, Old Trafford; School of Technology; Art School; Geographical Society's Buildings, St. Mary Parsonage; Palatine Buildings; Picturedrome, Pendleton; Whittlebrook Chapel, Walkden; Trafford Arms, Alderley Edge; Axe and Cleaver Hotel, Altrincham; Bridgwater, Eccles; Crown Hotel, Longsight.
Nottingham.—Mikado Café.
Oldham and District.—St. James' Church; Free Library and Art Gallery; Infirmary, Imperial Picture Palace, Reform Club.
St. Helens.—Borough Sanatorium, Provident Hospital, and Council Schools.
Sheffield.—St. Jude's Church; Christchurch, Pitsmoor; Sanderson Bros., Newbold; Sword and Bayonet Works; Heeley Picture Palace; Victoria Hospital.

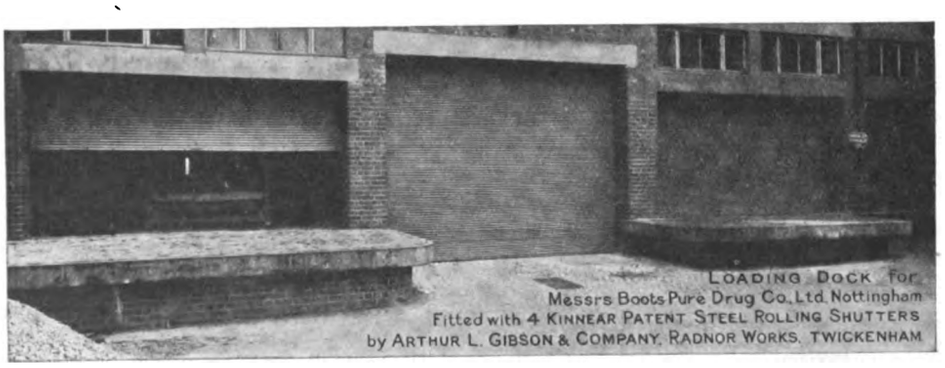
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purposes. The name of Chance is sufficient guarantee of the qualities of any goods exhibited by them.

For some years past Messrs. Hardtmuth & Faber have dominated the English pencil trade, and very rightly too. They have placed upon the market most excellently made pencils, and have pushed the sale with great enterprise. There is no reason whatever that this should be the case—our own manufacturers are quite as capable, if they only choose to exert themselves. Messrs. Chambers, Brown & Co., of Mitcham, Surrey, have entered the lists, and propose to put the best made possible on the market.

Turret clocks by Messrs. Potts & Sons, of Leeds, are being shown, and also steel pens manufactured by Messrs. Baker & Finnemore, Ltd., of Birmingham. In neither case could it be suggested that any German manufacturer could compete.

The Exhibition has undoubtedly served a very useful purpose, but for any repetition it is hoped a larger space may be obtained, and one in a better and more prominent position than occupied at the Agricultural Hall at Islington.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

War Contracts.

SIR,—Some time ago we were officially notified by the War Office that we had been placed upon the list of firms exempted from recruiting in consequence of being engaged on war contracts.

In order to impress upon our employees the importance of the work on which they are engaged, we addressed to each of them a personal letter, a copy of which is enclosed for your information. Those employees who are of recruitable age were requested to give a guarantee to enlist if called upon before exemption badges could be supplied.

We are very pleased to be able to say that as a result of our appeal over 95 per cent. of our recruitable employees applied for badges and signed the necessary guarantee—a result which we think extremely gratifying to all concerned.—Yours faithfully,

ED. BENNIS & Co., LTD.

Publicity Department, 28 Victoria Street,
Westminster, London, S.W.: May 15, 1915.

GOVERNMENT CONTRACTS.

We have received official intimation from the War Office that this firm has been placed on the list of those exempted from recruiting during the period that we have armament contracts on hand.

We are in a position now to obtain war badges for those of our employees who are of recruitable age (between eighteen and thirty-eight), and these we can obtain from the War Office upon each man, or youth, signing an application form, which can be obtained in the time office during the dinner hour or at 5.30 P.M.

We take this opportunity of pointing out to our employees that we have large contracts in hand for mechanical stokers, coal elevators, conveyors, ash-handling plants, &c., for several ammunition and powder factories that are being put up with all possible speed by the Government, quite 80 per cent. of our work now being of this character.

The present orders cover several months' work, and as we are under stringent guarantees as regards deliveries, the speed at which we turn out these orders and the quality of the work will control the placing of further War Office orders which we have at present under negotiation.

We therefore trust each man will realise his responsibility and assist the Government in their urgent need for war munitions by attending to his duties regularly and conscientiously, avoiding broken time, and getting through his work as speedily as possible, thus enabling us to execute the work we have undertaken within the times guaranteed.

It is our opinion that the men at home engaged in output of war munitions have as responsible and important duties to perform as have their brothers in the trenches, as it is only by their unselfish co-operation that our soldiers can be kept well supplied with ammunition now so urgently necessary to bring this unfortunate war to a speedy and satisfactory end.

We appeal to your chivalry and patriotism, and we do not think we shall appeal in vain.—For Ed. Bennis & Co., Ltd.,

EDWARD BENNIS,
Managing Director.

Fires Due to Air Raids, &c.

SIR,—1. As it is within the bounds of possibility that attempts may be made to start incendiary fires, the British Fire Prevention Committee make the following suggestions:

(*a*) The various fire brigades cannot be expected successfully to deal with any large number of outbreaks, and their attention would in any case be primarily devoted to fires affecting Government offices, workshops engaged on Government work, military stores, docks and hospitals, and the like, rather than to private property or semi-private property, however valuable. It therefore behoves all owners and occupiers of such premises to do their best to organise for self help.

(*b*) Innumerable establishments such as factories, warehouses, stores, modern office blocks, flats, hotels, and large private houses, as also the semi-public establishments like schools, baths, theatres, music halls, and assembly rooms are equipped with internal hydrant services and first-aid fire appliances. These should be promptly examined and the staffs (both male and female) frequently practised in handling the gear. The smaller establishments such as shops, offices, and ordinary domestic buildings should have am ample supply of buckets (kept ready filled with water), and where funds permit, one or more small hand-pumps. Occupants should know how to use these appliances efficiently.

(*c*) Every effort should be made by the public to assist the fire brigades in their onerous duties, but they should not omit on any account immediately to notify any outbreak that comes to their notice by telephone or otherwise—the method of calling assistance to be posted up in a conspicuous position.

2. In any event, the British Fire Prevention Committee consider the public would be well advised to have these matters attended to in the course of the present month and should remember that fires, caused by incendiary bombs, if promptly tackled with water in fair bulk, force, and continuity, need not spread, and are not quite the terrifying problem to deal with that the enemy would make them.

3. Those who desire additional useful hints on the fire question arising from possible air raids should apply for the British Fire Prevention Committee's "Warnings" which are provided gratuitously upon written application to the Registrar at 8 Waterloo Place, Pall Mall, London, S.W. (enclosing large size stamped and addressed envelope). These "Warnings" give useful information as to the necessary precautions and how to act when the emergency arises. Where special technical advice is desired, application should be made in writing, which will either be dealt with direct free, or where it is a matter affecting local authorities, forwarded in the proper direction for attention.—Yours very truly,

ELLIS MARSLAND,
Gen. Hon. Secretary.
The British Fire Prevention Committee.

8 Waterloo Place, Pall Mall, London, S.W.:
May 17, 1915.

Manchester Gas.

SIR,—Regarding paragraph page 418 current issue and comment on advanced price of gas, Manchester.

It shows the failing of the technical mind which can see only one half. The price of coal has advanced very much more than represented by 6*d.* per 1,000 feet in gas.

EXETER.

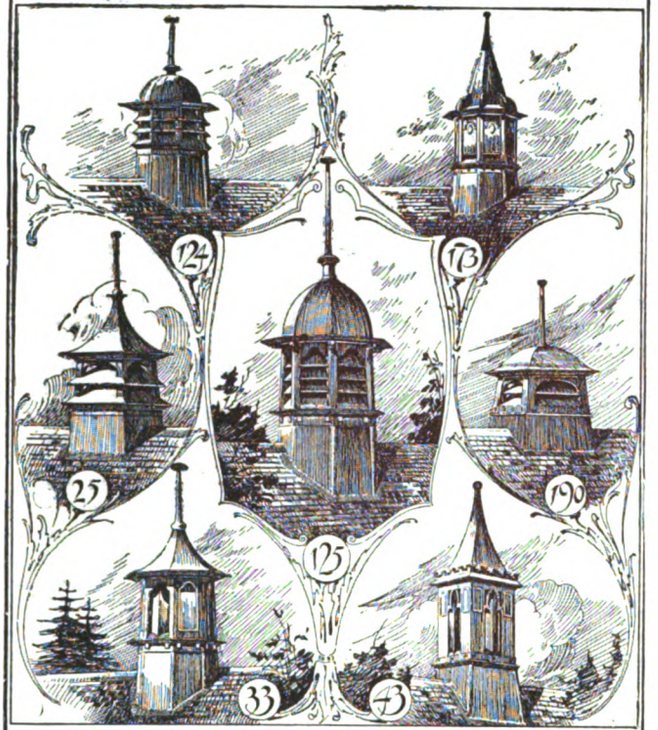
[There was no suggestion in our note that the increase of price was unreasonable or unjustified. The effect in any case is the same, and smoke abatement is one of the sufferers by the war.—ED.]

Labour Troubles.

SIR,—In many parts of the country one reads in connection with the building trades that demands are being made for increases in wages and that strikes are threatened or have been commenced, as is the case down here. Numbers of master builders are keeping their men going by accepting work at low prices and little profit, and clients are being

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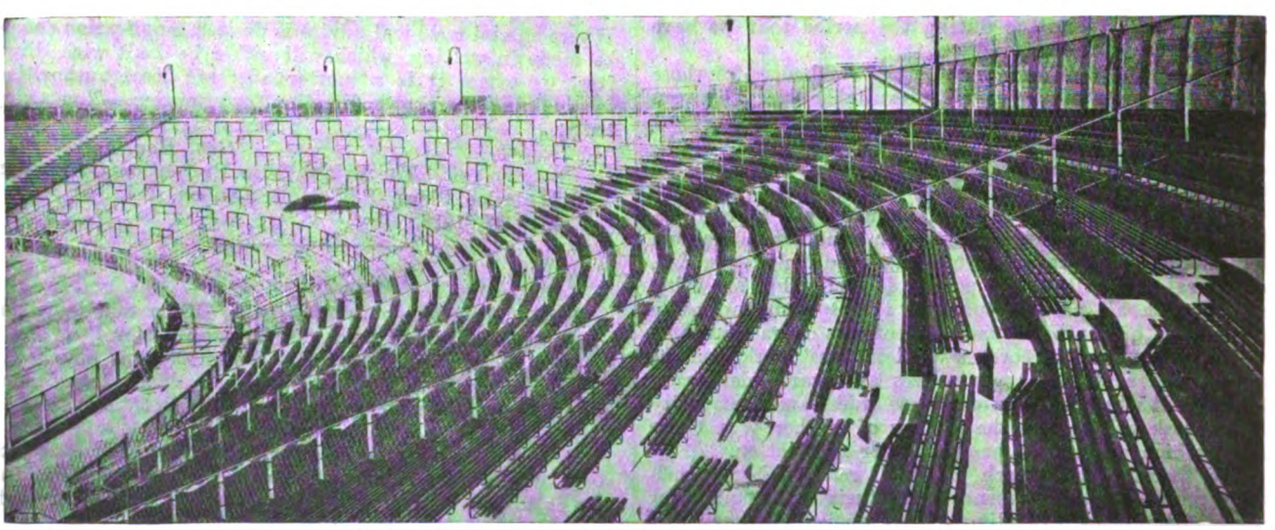
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induced to place work out of patriotic considerations. I have myself just had some considerable alterations and decorations purely on these grounds. The trades unionist is making matters more difficult in this respect and is stupidly and blindly providing a rod for his own back. You have at this moment an example of trades union patriotism in the L.C.C. electric tramways strike. At this time the Government should step in. All men who won't work should be made to work by forthwith taking them for the Army or Navy where their hours and pay will be very different, and where they will learn patriotism, obedience, and self-respect!—I am, your obedient servant.

Bournemouth: May 17, 1915. "TAPE AND SQUARE."

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Greenfield.—Proposed Wesleyan Sunday School.

CAMBRIDGESHIRE.

Ely.—Isolation hospital, Hill Pits (£1,000).

March.—Twelve cottages, off Station Road, for G.E.R. Company.

CHESHIRE.

Macclesfield.—Workmen's dwellings. Messrs. H. K. Rostron & Co., architects.

DEVON.

Barnstaple.—Workhouse and cottage homes. Mr. G. Mills, architect, 23 Castle Street. Mr. W. Dear, contractor, Gaydon Street.

Torrington.—Hospital: emergency ward.

DURHAM.

Haggerleases.—Proposed Council school (£1,100).

New Brancepeth.—Council school (£3,300).

Penshaw.—Bungalow, Penshaw Station: additions and alterations, for Mr. H. Bagnall.

House, Rose Street, Old Penshaw: addition, for Mr. Neilson.

Sedgeletch Road.—House and shop, for Mrs. Davison.

West Auckland.—Public elementary school for 300 places.

GLOUCESTERSHIRE.

Avonmouth Dock.—Gear store, for Messrs. C. J. King & Sons.

HAMPSHIRE.

Petersfield.—Parish Church: Leachman memorial vestry.

Southampton.—Water tower (£14,000), for the Corporation.

Winchester.—Smallpox hospital.

The Old Guildhall: improvements (£2,000).

KENT.

Gillingham.—Business premises, High Street. Mr. E. J. Hammond, architect, 21 Balmoral Road; also House, Barnsole Road.

LANCASHIRE.

Cadishead.—School (£800-£1,000). Mr. G. H. Kay, architect, 20 Cooper Street, Manchester.

Golborne.—House, Harvey Lane, for Mr. D. Bate.

Oldham.—Smallpox hospital, Chadderton (£11,500). Mr. H. Littler, County architect, 16 Ribblesdale Place, Preston.

Orrell Park.—Cinematograph theatre, corner of Orrell and Moss Lanes, for Mr. F. Sugg (of Aintree).

MIDDLESEX.

Neasden.—Church.

Shepperton.—Village hall.

MONMOUTHSHIRE.

Cross Keys.—Eighty-two Garden City houses, Pontywain, for Risca U.D.C.

NOTTINGHAMSHIRE.

Mansfield Woodhouse.—Six houses, Morven Avenue, for Mr. H. Ashley.

SOMERSET.

Taunton.—Business premises, East Street: addition, for Messrs. Marshalsea Brothers.

Carriage Works, East Reach: addition, for Messrs. Thomas & Co.

STAFFORDSHIRE.

Cannock.—Forty-four workmen's dwellings, Belt Road (Hightown) and Beech Tree Lane (£10,700). Mr. R. Blanchard, Council surveyor.

Great Barr. — Proposed sanatorium, Barr Common (£20,000), for Walsall and West Bromwich.

Lichfield.—Smallpox Hospital: additions. Mr. Rawstron, surveyor to R.D.C.

Stafford.—"Groundslow House": alterations, for the Staffs. Joint Tuberculosis Committee. Mr. T. Godwin (of Henley), contractor.

Wednesbury.—Dispensary, for above Committee. Messrs. J. Guest & Son, contractors, Amblecote, Stourbridge (£580).

SUFFOLK.

Brandon.—Infectious diseases hospital.

SURREY.

Egham.—Central Upper Standard School.

YORKSHIRE.

Barnsley.—Kendray Hospital, Ardsley: extension.

Castleford.—"Star" Picture Palace, Aire Street: additions. Mr. A. Hartley, architect, County Chambers.

Raywell.—Sanatorium, for the E.R. and York Joint Sanatorium Provisional Committee. Mr. Stamford, architect.

WALES.

Cardiff.—Gas-lighting Depôt, Womanby Street: additions and alterations. City engineer.

Conway.—R.C. Church, Rosemary Lane.

Llanwrtyd Wells.—Proposed Pump-room and curative baths.

SCOTLAND.

Edinburgh.—Aquarium, for the Scottish Zoological Society (£8,000).

Three shops, corner of East Claremont Street and Broughton Road, for St. Cuthbert's Co-operative Association, Ltd.

Tea rooms, Wellington Street, Promenade, Portobello, for Mr. G. Valvona.

Galashiels.—Theatre, shops, and café, Market Street, for the Galashiels Playhouse Company, Ltd.

Glasgow.—Bakery and store, Bishop Street, Anderston, for Messrs. Cooper & Co. (of Howard Street).

Boiler Shop, Elliot Street: extension, for Messrs. D. Rowan & Co.

Buildings, Norfolk Lane, for Messrs. R. Greenlees & Co., Ltd.

Three kilns, London Road, for the Govancroft Pottery Company, Ltd.

Subjects, Hydepark Street: additions and alterations, for Messrs. W. F. Lowrie & Co., Ltd.

Waiting-rooms and model yacht-house, Richmond Park, for the Corporation.

Warehouses and works, Dobbie's Loan and Bishop Street, for Messrs. Ferguson, Shaw & Sons.

Works, Balmore Road: additions, for the Glasgow Steel Roofing Company, Ltd.

IRELAND.

Ardee.—"Harristown House": additions. Mr. V. J. O'Connell, architect, 15 Earl Street, Dundalk.

Blackrock.—Eight artisans' dwellings, Booterstown. Mr. L. Monks, contractor (£1,990).

Cork.—R.C. Church, Eyeries, Berehaven. Messrs. W. H. Hill & Son, architects, 28 South Mall.

Cregagh.—Presbyterian Church.

Limerick.—Chapel and mortuary: additions, for the Committee of the District Asylum. Mr. J. O'Malley, architect, 10 Glentworth Street.

Newry.—Convent. Mr. O'Hare, architect, Cavendish Row, Dublin.

MR. F. W. HUNT, chief assistant valuer of the London County Council, was on Tuesday last promoted to the position of valuer at a salary of £1,500 a year, rising to £1,800 by instalments of £100 every two years. There were twenty applications for the post.

SWANSEA Corporation has received an instruction from the Local Government Board that its main drainage scheme with an outfall off the Mumbles Head estimated to cost £350,000 is considered generally satisfactory, but that the Corporation's consulting engineer, Mr. Midgley Taylor, is to confer with the Board on minor technical details. Although sanction now seems assured, it is not certain the scheme will be allowed to proceed till after the war.

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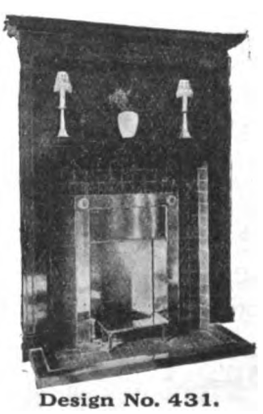
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THE
Architect and Contract Reporter.
FRIDAY, MAY 21, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—The Cleansing Committee of the Corporation of Dublin invite designs from landscape designers, &c., resident in Ireland for the laying-out of the reclaimed ground at Fairview, Dublin, and for the conversion of same into a public park. Premiums of £50, £10, and £5 will be awarded for the first, second, and third designs respectively, as selected. A copy of the conditions of competition, and a map of the site, will be furnished to each intending competitor on lodgment of £1, which will be returned on receipt of a design and report. Applications to be addressed to the Secretary, Cleansing Committee, Dublin Corporation, Lord Edward Street, Dublin.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1s. deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

ALLERTON BYWATER.—For erection and completion of dwelling-house off Station Road, for Mr. J. W. Simpson. Mr. J. P. Padgett, architect, Carlton Chambers, Castleford.

BLUE ANCHOR.—June 5.—For the carrying out of certain sea-defence works at Blue Anchor, near Minehead, for the Somerset County Council. The work consists of the provision of a concrete apron for a length of about 750 feet at the foot of the existing defences, and the construction of a length of 120 feet of new sea wall; also the construction of a reinforced-concrete casing to Pill Bridge outfall. Deposit £3 3s. Mr. E. Stead, A.M.I.C.E., county surveyor, Wells.

BRISTOL.—May 31.—For erection of a labour exchange and probate registry at Colston Avenue, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The Assistant Architect, H.M. Office of Works, Small Street, Bristol, and H.M. Office of Works, &c., Storey's Gate, London, S.W.

BRISTOL.—For erection of a villa, Downend Road, Kingswood, for Mr. E. Saunders. Mr. G. C. Brain, surveyor, 32 South Road, Kingswood, Bristol.

CANNOCK.—May 28.—For the construction of conveniences in Victoria Street, Hednesford; Cannock Road, Chadsmoor; and Hednesford Road, Cannock, with all incidental works, for the Cannock Urban District Council. Mr. R. Blanchard, engineer and surveyor, Council Offices, Cannock, Staffs.

CHURWELL.—May 31.—For the various works required in erection of spinning shed at Lane Side Mills, for Sir Charles Scarth & Sons, Ltd. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Queen Street, Morley, and 1 Basinghall Square, Leeds.

DELPH.—May 26.—For erection of the following works: (1) Additional storey to Gatehead Mills; (2) ten dwelling-houses, New Road; (3) additions to Gatehead House. Messrs. J. Berry & Sons, architects and surveyors, 3 Market Place, Huddersfield.

DEWSBURY.—May 31.—For the works required in the erection of certain buildings in connection with the Whitley Sanatorium, for the Corporation. The Borough Surveyor, Town Hall, Dewsbury.

GRAVENEY.—May 26. For execution of minor repairs at the Council school, for the Kent County Council. Mr. R. S. Dunn, correspondent, 3 Albion Terrace, Faversham.

GREAT BARR.—June 5.—For the repairing and pointing of certain lodges on their estate, for the Walsall and West Bromwich Unions Joint Committee. Mr. A. H. Ward, clerk, 22 Lombard Street, West Bromwich.

GRIMSBY.—June 5.—For the alteration of premises, "Rutland House," Deansgate, into Council offices, for the Grimsby Rural District Council. Deposit £2 2s. Mr. A. Hobson, engineer and surveyor, West St. Mary's Gate, Grimsby.

HASTINGS.—May 31.—The Corporation invite separate tenders for erecting bandstand and covered shelters on the extended promenade at the Hastings Pier, Hastings. Mr. P. H. Palmer, M.I.C.E., Borough engineer, Town Hall, Hastings.

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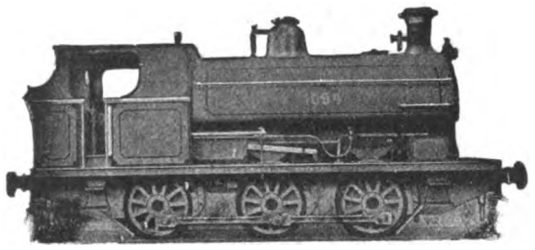
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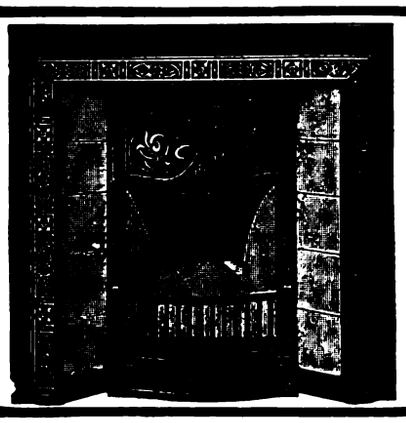
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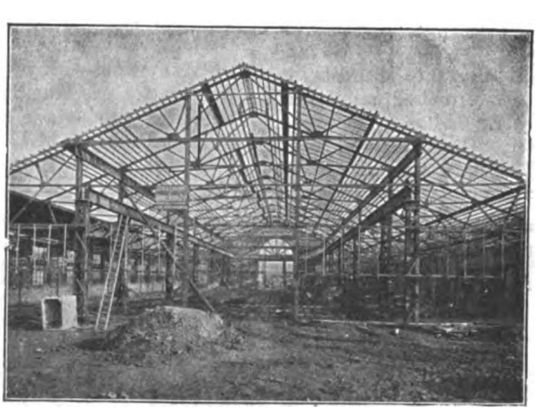
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IRELAND.—May 24.—For additions and alterations to the residence of Count Blake, Cloughballymore House, Co. Galway. Deposit £1. Mr. B. O'Flynn, B.E., civil engineer and architect, 56 Grand Parade, Cork.

IRELAND.—May 27.—For erection of a lightkeeper's dwelling, engine house, and oil store at Fanad Point (entrance to Lough Swilly), co. Donegal, for the Commissioners of Irish Lights. Deposit £2 2s. Mr. H. G. Cook, secretary, Irish Lights Office, Carlisle Buildings, Dublin.

IRELAND.—May 29.—For new lavatories and painting work at their workmen's institute, Dundalk, for the Great Northern Railway (Ireland). Deposit £2 2s. The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

IRELAND.—May 29.—For erection of goods offices at Dublin, for the Great Northern Railway Company (Ireland). Deposit £2 2s. The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

LEYTON.—May 27.—For the construction of a temporary fire station on portion of the permanent hospital site, Church Road, for the Urban District Council. Deposit £5. Mr. E. H. Essex, A.M.I.C.E., Town Hall, Leyton.

MANCHESTER.—June 7.—For supplying and fixing tiled dados at the Old Hall Drive municipal school, Gorton, Manchester, for the Manchester Education Committee. Deposit £1 1s. The Offices, Deansgate, Manchester.

NETHERTON.—May 27.—For the various works required in extensions and alterations to the Memorial Schools, Netherton, near Huddersfield. Send names by May 27 to Messrs. J. B. Abbey & Son, architects and surveyors, District Bank Chambers, Market Street, Huddersfield.

SCOTLAND.—May 22.—For (1) mason and carpenter's work for new byre wing, &c., at Lower Dagie; (2) mason, carpenter, and slater's work for new turnip shed, &c., at Wester Tolmaads; (3) mason, carpenter, and slater's work for new pig and poultry houses at Maryfield; (4) carpenter and slater's work for repairs to dwelling-house and offices at Milton of Ennets, on the Findrack Estate. Messrs. Davidson & Garden, 12 Dee Street, Aberdeen.

SCOTLAND.—May 29.—For the mason, carpenter, slater, asphalter, plumber, plasterer, and painter works required in the erection of a new school and janitor's house at Rothes, for the Rothes School Board. Deposit £1. Mr. J. Wittet, architect, Elgin.

SCOTLAND.—June 4.—For the execution of reinforced-concrete floors and jointless flooring required at the extension to Carolina Port generating station, Dundee, for the Corporation. Mr. H. Richardson, M.I.E.E., general manager and engineer, Electricity Department, Dundee.

SCOTLAND.—June 15.—For erection of not more than 150 dwelling-houses on the Roxburgh Street site, for the Greenock Corporation, each house to consist of two or three apartments, with scullery and w.c., in conformity with the local building regulations. The site is bounded by Roxburgh Street, Duncan Street, Holmscroft Street, and Captain Street. The Office of Public Works, Municipal Buildings, Greenock.

SHEFFIELD.—May 28.—(Contract No. 139.) For excavations and concrete work, for the Electric Supply Committee. Deposit £1 1s. Mr. S. E. Feddon, engineer and general manager, Commercial Street, Sheffield.

STAMFORD.—June 4.—For erection of twenty-four working-class dwellings near the Conduit Road, for the Town Council. Deposit £2 2s. Mr. F. R. Ryman, A.M.I.C.E., borough engineer, Town Hall, Stamford.

TAVISTOCK.—May 29.—For the following work at Council schools, for the Devon Education Committee: Tavistock (infants), alterations, improvement of lighting and ventilation, new porch, &c.; Tavistock (Gulworthy), alterations, improvement of lighting and ventilation, and the improvement of the offices, &c. The Architect's Office, 1 Blackall Road, Exeter.

THORNTON HEATH.—May 24.—For building work in connection with the repair and repointing of chimney stacks at the infirmary, Mayday Road, Thornton Heath, for the Guardians of Croydon Union. Deposit £1 1s. Mr. H. Berney, architect, 33-35 High Street, Croydon.

UXBRIDGE.—May 25.—For the erection of women's lavatory on a site adjoining the Market House, for the Urban District Council. Mr. W. L. Eves, F.S.I., surveyor, 54 High Street, Uxbridge, Middlesex.

WALES.—For proposed school at the rear of the synagogue, Cathedral Road, Cardiff. Deposit £1 1s. Messrs. Willmott & Smith, architects and surveyors, 29 St. Mary Street, Cardiff.

WALES.—May 26.—For building forty to fifty semi-detached houses at Cwmaman, for the Duffryn View Building Club. Mr. A. S. Cameron, architect, 14 Victoria Square, Aberdare.

WALES.—May 27.—For erection of a vestry at St. Catherine's Church, Pontypridd. Deposit £1 1s. Messrs. A. O. Evans, Williams & Evans, architects, Pontypridd.

WALES.—May 31.—For erection of a house in Colcot Road, Barry, for Mr. D. Morgan, Tylorstown. Deposit £2 2s. Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypandy.

WALES.—June 1.—For the foundations, &c., in connection with the new Government Buildings, Cathays Park, Cardiff, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The National Health Insurance Commissioners (Wales), 14 Richmond Terrace, Cardiff.

WALES.—June 9.—The Welsh Town Planning and Housing Trust, Ltd., invite applications to tender for erection of the first fifty-two houses at the Barry Garden Suburb, South Wales. Copies of plan, specification, schedule, and form of tender can be obtained by application not later than May 21, on deposit of £2 2s. to Mr. T. A. Lloyd, Licentiate R.I.B.A., architect to the Welsh Town Planning and Housing Trust, Ltd., 21 Park Place, Cardiff.

WALTHAM.—May 26.—For execution of summer repairs and redecorations at the Council school, for the Kent County Council. Mr. C. J. Wanley-Croft, Bridge, Canterbury.

WESTON RHYN.—June 9.—The Welsh Town Planning and Housing Trust, Ltd., invite applications to tender for the erection of the first houses on the Weston Rhyn Garden Village, near Oswestry, Salop. Copies of plans, &c., and form of tender can be obtained, by application not later than May 22, on deposit of £2 2s., to the Architect, the Welsh Town Planning and Housing Trust, Ltd., 21 Park Place, Cardiff.

WROTHAM.—May 26.—For execution of summer repairs and redecorations at the Wrotham Borough Green Council School, for the Kent County Council. Mr. F. W. Day, correspondent, High Street, Borough Green.

TENDERS.

BRIGHTON.

For supply, delivery, and erection at their Southwick Power House, near Brighton, of one surface condenser, capable of dealing with 52,500 lb. of steam per hour, for the Town Council.

Escher, Wyss & Co.	£2.600	0	0
Hick, Hargreaves & Co.	2.460	0	0
Storey & Co.	2,018	0	0
Brush Electrical Engineering Co.	2.013	0	0
Mirrlees, Watson & Co.	2.000	0	0
Willans & Robinson	1.980	0	0
Worthington Pump Co.	1,965	0	0
British Westinghouse Electric and Manufacturing Co.	1,946	0	0
RICHARDSONS, WESTGARTH & Co., LTD. (*accepted*)	1,925	0	0
Cole, Marchant & Morley	1,576	0	0
Adamson & Co.	1,195	0	0

EBBW VALE (MON.).

For the erection of forty cottages on the Beaufort Estate, for the Fitzroy Avenue Building Club, and for the construction of roads and sewers. Messrs. VAUGHAN RICHARDS & WILLIAMS, architects, Ebbw Vale.

For Houses.	Per Cottage.		
Ernest Clarke, Wrexham	£236	16	0
A. S. Morgan, Newport	220	0	0
Jones Bros., Treharris	220	0	0
Rhys J. Rees, Pontypridd	210	0	0
S. D. BEVAN, Beaufort (*provisionally accepted*)	208	0	0
For Roads.			
Gwilym L. Morgan, Pontypridd	£1,961	0	0
Ernest Clark, Wrexham	1,300	0	0
Jones Bros., Treharris	1,230	0	0
A. S. Morgan, Newport	1,100	0	0
GEORGE A. BROWN, Pontllanfraith (*provisionally accepted*)	1,040	0	0

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CHESTERFIELD.

For (*a*) alterations and additions to administration block at Penmore Hospital; (*b*) erection of a ward to accommodate twenty beds at the Penmore Hospital. Mr. TOM S. WILCOCKSON, architect, Chesterfield. Quantities by the architect.

(*a*) David Brown, Hasland, Chesterfield	£2,228	0	0
(*b*) Ernest Revill, Foljambe Road	2,390	0	0

EASINGTON COLLIERY.

For the erection of a Wesleyan Methodist Chapel at Easington Colliery. Mr. J. WILSON HAYES, architect, Wingate, Co. Durham. Quantities by the architect.

White	£1,679	0	0
Tweddle	1,675	0	0
Dyson	1,668	0	0
Earnshaw	1,650	0	0
Potter	1,643	0	0
Wilkinson & Bowman	1,627	0	0
Huntley & Son	1,613	0	0
Pearson & Son	1,613	0	0
Ponting & Co.	1,565	0	0
Curry	1,565	0	0
T. Pearson, Ltd.	1,559	15	7
J. MORRIS, Felling-on-Tyne (*recommended*)	1,551	0	0

IPSWICH.

For extending the Christchurch Clothing Factory and woollen warehouse in Old Foundry Road and St. Margaret's Street, for Messrs. Phillips & Piper, Ltd. Mr. R. C. WRINCH, A.R.I.B.A., architect, Ipswich.

Catchpole & Son	£8,896	0	0
Marriott	8,285	0	0
Ward & Son	8,200	0	0
Cubitt & Sons	8,058	0	0
Architect's estimate	8,153	0	0

KELHAM.

For residence, &c., to be built at Kelham, near Newark. Messrs. SHEPPARD & LOCKTON, M.S.A., Licentiate R.I.B.A., architects, Bargate, Newark.

Builders' work.

W. H. Hopes	£1,164	0	0
S. & R. Horton	1,117	0	0
Parks & Son	1,015	0	0
George Brown & Sons	960	0	0
W. Renshaw & J. Wright	951	0	0
W. SMITH, Newark (*accepted*)	910	0	0

Plumbers' work.

George Watts	£240	0	0
Parks & Son	195	0	0
S. & R. Horton	186	0	0
Harvey Bros.	175	0	0
S. Ironmonger	173	0	0
A. SMITH, Newark (*accepted*)	159	0	0

TINGLEY (YORKS).

For the various works required in erection of residence, Bradford and Wakefield Road, for Mr. A. Cowling. Mr. T. A. BUTTERY, Licentiate R.I.B.A., architect, Queen Street, Morley. Quantities by architect.

Accepted tenders.

Fred Clough, mason	£222	17	0
Isaac Newton, joiner, Morley	190	0	0
J. Richardson, plumber, East Ardsley	51	2	0
W. J. H. Crowther, plasterer, East Ardsley	28	0	0
J. Alkman & Sons, slaters, Leeds	17	12	0
Fred Veichy & Son, ironmongers, Leeds	13	16	0

THE Electric Light Committee of Edinburgh Town Council recommend the Council to accept, in connection with the erection of the electric light extension works at Portobello, an estimate by the Stirling Boiler Company, Renfrew, for water tube boilers at the cost of £32,000.

MR. J. E. WILKES, A.M.I.C.E., has been selected out of 140 applicants for the post of borough engineer and waterworks engineer at Newark, vacant by the resignation of Mr. T. P. Frank on his appointment to Stockport. Mr. Wilkes is deputy borough engineer at Northampton.

THE REMOVAL OF RUST BY MEANS OF CHEMICAL REAGENTS.*

By J. NEWTON FRIEND and C. W. MARSHALL (Worcester).

FOR many purposes of both technical and purely scientific importance it is eminently desirable to find some method or chemical reagent that will readily remove rust from iron.

In many cases, as, for example, in cleaning structural steel work prior to painting, the loss of a little iron along with the rust is not a matter of serious moment. In the cleansing of museum specimens, particularly when attempts are made to read partially obliterated inscriptions, it is important to lose as little iron as possible; whilst in scientific investigations, which have for their object the quantitative determination of corrosion by weighing the iron before and after attack, it is essential that the loss of unoxidised metal involved in removing the rust shall be reduced to the absolute minimum.

Electrochemical methods have frequently been suggested, the rusty iron being suspended as cathode in a suitable electrolyte, the anode consisting of some inert material, such as carbon or platinum. By adjusting the current density, the hydrogen set free at the cathode appears to loosen the rust† by what is asserted to be a purely mechanical process, not involving the solution of any iron, and for such processes considerable accuracy is claimed. Scraping with knives and polishing with sand- or emery-paper has been the process adopted for small specimens by the present authors in their hitherto published researches, and the method has proved perfectly satisfactory. But for large test-pieces, such as plates measuring 1 or 2 square feet in area, the scraping process is very disagreeable and fatiguing. In the literature on this subject different investigators have frequently alluded to dilute solutions of sodium citrate as suitable media for loosening rust without dissolving any iron. It seemed desirable, therefore, to test this assertion by a series of quantitative experiments with rusty plates, and to extend the inquiry to the action of other chemical reagents upon rusty iron.

Method of Experiment.

It is not an easy matter to obtain a large number of small plates rusted evenly over their surfaces and to an equal quantitative extent, such as is required for the present investigation. The metal ultimately chosen consisted of mild open-hearth steel sheets, cold rolled and charcoal annealed, measuring 2 by 1 feet in area, and 22 B.W.G. in thickness. Several of these sheets were soaked in water and exposed to the air for a month, after which they appeared to be corroded fairly equally over their surfaces. They were then cut up into squares, measuring $2\frac{1}{4}$ by $2\frac{1}{4}$ inches, and weighing approximately 19 grammes. In order further to insure uniformity, results obtained with the small plates were only compared with one another when they had been cut from the same large sheet. The plates contained approximately 0.2 gramme of hydrated ferric oxide, in which was only the merest trace of ferrous iron. Several of the plates were thoroughly cleaned with emery-paper, the mean losses in weight being taken as standards for comparison with the results obtained by chemical means. As an example of the degree of accuracy that may reasonably be expected, the following losses of weight of small plates cut from the same sheet may be quoted:—

	Sheet 1 Gramme	Sheet 2 Gramme
Plate 1	0·2495	0·1772
Plate 2	0·2347	0·1682
Plate 3	0·2336	0·1718
Plate 4	0·2398	0·1628
Mean	0·2394	0·1700

The extreme values for plates cut from sheet 1 differ from each other by 6.4 per cent., whilst for sheet 2 the difference is 11.3 per cent. These variations suffice to show how important it is to repeat all experiments a considerable number of times in order to insure that no effect of importance is either caused or masked by any eccentricity of the metal.

The plates, except where otherwise stated, rested on paraffin sheets in an inclined position in beakers of 450 cubic centimetres capacity, and exposed to diffused daylight at a temperature of approximately 15° C. At stated intervals the plates were removed, scrubbed with a small brush under the tap, wiped and dried with filter-paper, the

* A Paper read at the Annual Meeting of the Iron and Steel Institute.

† See Jacob and Kaesbohrer, *Chemiker Zeitung*, 1911, vol. xxxv. p. 877.

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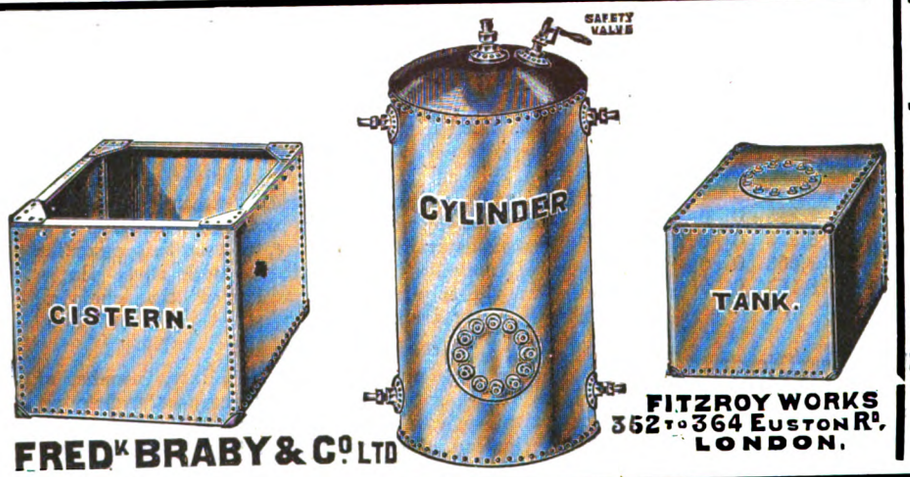
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last traces of moisture being removed prior to weighing by gently warming near a boiler. After immersion in acid solutions, the plates invariably tarnished during drying if treated in this way, but that was obviated by dipping into dilute caustic potash solution for a moment or two after scrubbing, in order to neutralise any traces of acid remaining in the pores of the metal.*

Sodium Citrate.

Five different concentrations of sodium citrate were used —namely, 1, 2, 5, 10, and 20 per cent.—with the following results:—

Days	Loss in Weight of Rusty Plates				
	1	2	3	4	5
	Gramme	Gramme	Gramme	Gramme	Gramme
3	0·1248	0·1576	0·2266	0·2770	0.3810†
4	0·1746	0·2100	0·2718	0·3260	0·4328
5	0·2110	0·2334	0·2994	0·3376	0·4574
6	0·2412	0·2534	0·3218	0·3714	0·4764
7	0·2942	0·2738	0·3474	0·3874	0·5048
8	0·3802	0·3160	0·4146	0·4258	0·5598
Sodium citrate	1 per cent.	2 per cent.	5 per cent.	10 per cent.	20 per cent.

The mean weight of rust removed by mechanical means from similar plates of rusty iron was 0.2085 gramme.

After six days the plate immersed in the 1 per cent. solution appeared to begin rusting on its own account. After eight days the first three plates were black in appearance, but turned brown on drying; plate 4 was fairly clean; and plate 5, in the 20 per cent. solution, remained perfectly clean after the first four days, the metal presenting a beautiful surface. During cleaning it lost in weight practically 100 per cent. more than the mechanically cleaned plates, and the iron continued to dissolve during the whole period of immersion. It is interesting to note that the fourth plate became almost clean in eight days, after it had lost in weight an amount practically equal to that lost by plate 5 when clean.

From these results it is evident that solutions of sodium citrate are not suitable media for investigations involving the quantitative removal of rust. Also they are extremely slow in their action. For museum purposes a 20 per cent. solution might be useful, since it leaves a nice surface on the metal; but, as will be seen in the sequel, other, cheaper and more rapid, reagents would probably be more serviceable.

Boric Acid.

The concentrations of boric acid employed were 0.5, 1.0, 1.5, 2.0, and 3.5 per cent., the last named being saturated.

Days	Loss in Weight of Rusty Plates				
	1	2	3	4	5
	Gramme	Gramme	Gramme	Gramme	Gramme
1 ...	0·0472	0·0990	0·1622	0·1968	0·3260
2 ...	0·1242	0·1044	0·1646	0·1990	0·3566
3 ...	0·1310	0·1968	0·1696	0·2030	0·3802
4 ...	0·1742	0·1984	0·1736	0·2100	0·3620
7 ...	0·3060	0·3400	0·2720	0·2184	0·3690
11 ...	0·3742	0·3857	0·3584	0·3742	0·3878‖
14 ...	0·4002	0·4131	0·3614‡	0·3764	0·4054
Boric acid ...	0·5 per cent	1·0 per cent.	1·5 per cent.	2·0 per cent.	3·5 per cent.

The mean weight of rust removed by mechanical means from similar plates of rusty iron was 0.2085 gramme. It will be observed that all the solutions tend to clean the iron, the saturated solution acting the most rapidly. When once the rust has been removed, the iron dissolves very slowly in the solution. Despite the slow rate of solution of the cleaned iron, the loss involved in the removal of the rust is 75 per cent. more than the mean obtained by mechanical methods (0.2085 gramme).

Various other chemical reagents were tried, but none of them proved as useful as boric acid, and it did not appear possible to find a reagent that would remove rust quantitatively without also dissolving some of the iron. Ten per cent. solutions of aluminium sulphate cleansed the iron in twenty-four hours and yielded an excellent metallic surface.

A 1 per cent. solution of chromic acid removed rust only excessively slowly, a plate of metal not becoming clean in six weeks, during which period it had lost 0.2448 gramme in weight.

Saturated solutions of zinc sulphate and of magnesium chloride were also tried. In the former the rust turned black in colour, and signs of cleaning were apparent in the latter only after eleven days.

A 10 per cent. solution of ferrous sulphate cleaned a piece of iron in a fortnight, the loss in weight being 0.4588 gramme (by mechanical cleaning, 0.2394 gramme).

An attempt was also made to clean some plates by immersing in 5 per cent. caustic potash solution in contact with granulated (and in some cases powdered) zinc, the surface of the plates being scratched free from rust in places to insure good contact.

The rust was converted into a blackish mass containing a high percentage of ferrous oxide, but no satisfactory cleaning action was observed. A plate of pure Kahlbaum's foil, entirely free from rust, when immersed in caustic potash solution in contact with zinc, slowly gained in weight after the first day.

Since it appeared impossible to find a reagent that would remove rust quantitatively without also dissolving some of the iron, it occurred to the authors that if the plates were immersed in sulphuric acid until the rust had been loosened, the amount of iron passing into solution could easily be estimated by titration of the acid in the usual way with permanganate, and this subtracted from the total loss in weight of the plates would give the loss due to rust. It was found, however, that if the layers of rust were thick the nascent hydrogen liberated during the initial stages of solution of iron reduces some of the more closely adhering rust to the ferrous condition, with the result that the subsequent titration yields too high a value and the apparent weight of rust is too low.

* See Friend, *Transactions of the Chemical Society*, 1912, vol. ci. p. 50.

† One side clean on scrubbing.

‡ Began to rust again.

‖ Nearly clean.

THE NORWICH SYSTEM OF INDEMNITY.

PROFESSIONAL and business men would undoubtedly be well advised to investigate the newest form of indemnity policy which the Norwich Union Fire Insurance Society, Ltd., have issued with a special view to their peculiar requirements. Hitherto sickness and accident insurance has been little more than a gamble, inasmuch as the policy-holder was equally liable to find himself in-pocket as out-of-pocket at the end of the indisposition. But by the Society's new original indemnity policy this unbusinesslike and, to many, unattractive uncertainty is replaced by a very definite, dignified, and equitable contract which should make for better satisfaction to both parties. By it, in addition to the usual benefits, complete indemnity can be obtained against financial loss (arising out of the accident or sickness), whether through diminution in earnings or salary and cost of substitute or *locum tenens* up to the limit fixed by the assured's policy. In other words, the principle on which insurance is paid after a fire, according to the damage or loss of profit involved, has been adapted to cases of sickness or accident.

Recently Mr. William Schooling gave, in the *Daily Telegraph*, a most enthusiastic welcome to this Norwich system of indemnity, and as an example of accident insurance, apart from sickness, he took the case of a master builder who desires to be insured for the fixed sum of £500 in the event of accidental death, or the loss of two limbs, or both eyes, or one limb and one eye. "He would receive £250 if he lost by accident an eye, or a foot, or a hand. So far there is nothing new, and it is quite appropriate that the policy-holder for such consequences as these should insure for whatever sum he thinks fit. Now comes the new part. He wishes to be indemnified against the expenses of accident up to a specified sum for any one claim, and he himself fixes the amount at £50. The premium for the whole of these benefits is £4 7*s.* 6*d.* a year. He could fix the expenses at any larger sum than £50 if he chose, but of course if he insures up to, but not exceeding, £50, he cannot expect to be paid more than the sum he insures for if it fails to cover his expenses. The whole of this sum may disappear in a fortnight, and a weekly payment of even £6 a week for two weeks would not cover his expenses. This is the simplest application of the new principle."

It is impossible to give full particulars in these columns about the new departure, and we would refer inquirers to the head office of the Society (Accident Branch), St. Giles Street, Norwich. In passing, attention may be drawn to the fact that this initiative springs from a corporation which dates back nearly 120 years. Another recent proof of their ever-youthful enterprise was seen in the erection of the handsome London head office in Fleet Street.

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VARIETIES.

IT is proposed to hold a Smoke Abatement Exhibition in the Exhibition Hall, Zoo Buildings, Glasgow, from September 23 till October 16.

INTIMATION has been received from the Secretary to the Treasury that in future the passing of examinations of the Faculty of Surveyors of Scotland shall be regarded equally with the passing of the examinations of the Surveyors' Institution as affording primâ-facie evidence of suitability for appointment to permanent positions under the Government.

MESSRS. PATMAN & FOTHERINGHAM, LTD., builders and contractors, of 100 and 102 Theobald's Road, W.C., and Park Street, Islington, inform us that they have been successful in securing the following contracts. New warehouse in York Road, Wandsworth, S.W., for the Vacuum Oil Company, Ltd.; new premises in Drury Lane, W.C., for Messrs. Watkins & Simpson, Ltd.; and the first portion of the London Jewish Hospital, Stepney Green, Stepney, E.

ST. WOOLLOS CHURCH, Newport, the mother church of the town, one of the oldest in Wales, was last week formally dedicated after its restoration by the Bishop of Llandaff. The task was entrusted to Mr. Harold Brakspear, F.S.A. During the restoration many interesting discoveries were made. The removal of plaster revealed an early Saxon door in the chapel of St. Mary, also a low-side window dating from the thirteenth century. In the Norman nave and aisles were found a mediæval hagioscope, a thirteenth century Gothic window, a pre-Reformation piscina, while of especial interest was the discovery made by the removal of the masonry of a blocked-up door, of a stone spiral staircase, which led to the old rood loft. In the Crindau chapel the renovators came across the masonry jamb of an old window which was superseded by a fifteenth century window. Further search brought to light portions of the original chancel arch. The church has been entirely reseated, and heating and ventilating apparatus installed.

ON Thursday afternoon, May 13, the Queen and Princess Mary visited the Galleries of the Medici Society and inspected Mr. Louis Davis's stained glass for the choir windows of Dunblane Cathedral. The windows, which are the gift of Mr. Justice Younger in memory of his mother, have for their subject the Benedicite. The whole series of four windows consists of sixteen lancets, each 20 feet high. As it is impossible to show the whole of the glass at one time, two exhibitions have been arranged. In the first exhibition, which closed on May 19, the series shown consisted of the "Allegory" and "Chaos" windows. The exhibition will re-open on May 28, when the second series will be on view for a period of four weeks—viz., the "Earth" and "Humanity" windows.

AT a meeting of Northern District Committee of Ayrshire County Council a communication from the Local Government Board dealing with the proposed garden village at Ardeer, Stevenston, was intimated. It stated that a Welsh housing company has purchased a portion of the estate of Ardeer in the vicinity of the town of Stevenston, and proposes to erect thereon 700 semi-detached houses, principally for the accommodation of workmen employed at Nobel's factories. The Board desire to know whether the proposed development might be controlled and ensured by means of a town-planning scheme. The meeting decided to reply that in the opinion of the District Committee it would not be prudent to adopt any town-planning scheme in the meantime, as the present housing scheme is drawn out on town-planning lines, and the scheme provides for 780 houses in all, varying in size from kitchen, scullery, and three bedrooms to kitchen, scullery, bathroom, three bedrooms, and parlour.

THE L.C.C. Establishment Committee report as follows:—On the signing of the contract for the building of section D of the new County Hall, payments amounting to about £5,860 will become due to Mr. Ralph Knott, the selected architect, and Mr. W. E. Riley, the Council's official architect, in respect of the services which have already been rendered by them in preparing the drawings, &c., relating to this portion of the new building. The drawings in question were completed on November 1, 1914, in accordance with our desire, in the hope that arrangements might be made at an early date for the construction of this section of the new building to be put in hand. Owing, however, to the special circumstances now obtaining owing to the war, it is not likely that the work will be commenced for some time. Mr. Knott has asked that an advance on account may be made to him forthwith out of the amount to which he will be entitled on the signing of the building contract. We think it equitable that an advance of 75 per cent., say, £4,397, of the amount of £5,860, should now be made to him and to Mr. W. E. Riley, the Council's official architect, in the proportion of 9-10ths and 1-10th respectively, in accordance with the terms of the agreement between the Council and Mr. Knott in respect of the commission payable to him.

MR. FANINDRA NATH BOSE, a native of Bengal, who entered the Royal Institution School of Art as a student in 1905, and has since been a distinguished student of the Edinburgh College of Art, sailed for India on May 8. Mr. Bose, who gained the diploma in 1911, and was awarded a travelling scholarship of £100, proved himself, in view of the Director of the College, an exceptionally brilliant student of sculpture, and his work was highly commended by Sir George Frampton and Sir W. Goscombe John. He has now, on the recommendation of the latter gentleman and Mr. Spielman, been appointed sculptor to the Gaekwar of Baroda. Under a signed agreement Mr. Bose is to receive an annual salary of £250 and a studio and workshops at Baroda. He is to execute for the Gaekwar a series of bronze figures of national historical personages of Baroda, for each of which he is to be paid £270, and at the same time he is to be free to undertake other commissions. He is also to act as adviser to the Gaekwar for the technical schools in Baroda, where it is intended to develop bronze casting.

DR. A. CAMPBELL MUNRO, Medical Officer of Health for Port-Glasgow, has issued his annual report dealing with the health and sanitary conditions of the burgh. Referring to the housing problem of the town, Dr. Munro says it is difficult to say anything new on the subject. He had already spoken of the melancholy fact that a considerable proportion of the population who could afford better housing accommodation continued to live in two-apartment houses with all the social, hygienic, and moral disabilities attaching to such a mode of existence. There were, indeed, many people who added to these disabilities by keeping a lodger. A considerable proportion of the population lived in dirt and disorder. The women congregated about the close mouths, making a dash ahead, when the sanitary officer paid them a visit, to clean a chair, muttering explanations intended to convey the impression that the dirt and disorder of the house were due to abnormal circumstances over which they had no control. Economical marketing and cooking were unknown arts. "And all this," adds the Medical Officer, "after forty-two years of compulsory education!"

TRADE NOTES.

THE net profits of the Wouldham Cement Company for 1914 were £50,719, and £5,285 was brought forward. A final dividend of 7½ per cent. is proposed on the ordinary shares, making 12½ per cent. for the year, and carrying forward £15,785.

MESSRS. WM. WRIGHT & SON (LINCOLN), LTD., the builders of "Petwood," illustrated in our pages this week, carried out the panelling to the oak room. The same firm have been the builders and contractors for the following public institutions: The Carnegie Library, Lincoln; County Hospital, Lincoln; Home for Nurses in connection with latter; Police Station, Scunthorpe; Council Schools, Lincoln, Grimsby, Sleaford, &c.

THE following report from the engineer of one of our largest boroughs will be of interest. The heating chambers and underground coal-storing places of a school built about eight years ago were continually flooded, so much so that the boilers were destroyed. The engineer at first thought he would have to fill in the chambers because the water was made so rapidly, but decided as a final resort to make a new waterproofed concrete wall and to give the wall a waterproofed cement rendering. The result was excellent. New boilers were put in, and the whole of the underground chambers are now dry. The work was done last September, and has stood the heavy rains of the past winter. The engineer states that he is now specifying Pudlo (the waterproofer used on the above work) for a heating chamber to a sanatorium. We are informed that the concrete water tower recently erected at Stafford has been lined with Pudloed cement with perfectly satisfactory results.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, May 28.

Royal Sanitary Institute : Provincial Sessional Meeting at Shrewsbury (two days).

Saturday, May 29.

Edinburgh Architectural Association : Visit to Gogar House, Corstorphine.

Monday, May 31.

Surveyors' Institution : Annual General Meeting at 5 P.M.

Wednesday, June 2.

Royal Archæological Institute : Paper entitled "Carcassone : the Cité and the Basse-Ville," by Mr. C. H. Bothamley, B.Sc., in the apartments of the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

Friday, June 4.

Institution of Municipal and County Engineers : Scottish District Annual Meeting at Ayr (two days).

ARCHITECTURE AT THE ROYAL ACADEMY.—III.

CONTINUING our review of the ecclesiastical architecture displayed this year in the Architectural Room of the Royal Academy, we note in Mr. Richard T. Beckett's "Proposed Church of St. Michael and St. George, Heswall," a simple and severe design in which the plan consists of a nave with processional aisles and a chancel with a chapel to the north and a square tower to the south. A fall of ground level to the east enables the vestries to be placed below the chancel. Thus a good opportunity has been used to a successful result. A "Proposed Baptist Church and Schools, Lower Edmonton," by Messrs. John Wills & Sons, is a modern and picturesque though symmetrically arranged building, of which the west end in brick with Decorated tracery windows is principally shown. Mr. Gerald Cogswell's "Chapel, Highfield School, Liphook," is adorned with a reredos in plain panelled oak, to which a small amount of colour is applied, and which terminates in a canopy over the altar. The panelling forms a background for a painted triptych, and is itself backed by a green-patterned decoration on the walls divided into panels by vertical bands of dove-grey colour.

Mr. William D. Caröe, in his design for the "Church of St. Michael, Loughor," plays for quaintness and originality, and, as usual in his work, achieves a feeling of unrest and lack of restraint. Surely the square and battlemented tower would have been sufficient for the skyline without the stone bell-cot which sits astride the roof without visible means of support. The plan should be interesting if only that one might see how the chapel works in. The interior of "St. Gabriel's Church, Plymouth," also by Mr. Caröe, shows a striving for oddity in the suggestion that the nave piers have overgrown themselves and pushed up the springing of the arches to an uncomfortable four-centred form. A bit of the exterior shown in a corner of the drawing seems to have been chosen for its fidgetiness.

Messrs. Everard, Son & Pick's "Proposed Church at Leicester," which, the drawing tells us, is intended to be known as the Church of the Holy Apostles, is an essay in Romanesque, with a big flat central dome of Byzantine character with semi-circular arched gables and four small angle turrets. As far as the external view informs us, the plan appears to be eminently congregational. A morning chapel to the south and an apsidal east end are features of the external grouping. Mr. Austin Durst's "Design for a Town Church" is an interior view of a competition design for the Church of St. Peter, Acton, and as such scarcely likely to be approved by the ordinary suburban building committee, with its severely restrained treatment of plastered wall and vault, well as these emphasise the colour decoration over the chancel arch, and the hanging rood. Preciousness is a quality in design that does not often pay in competitions.

"Interior of the Church of St. Gabriel, Aldersbrook, Manor Park, E.," by Mr. Charles Spooner, shows a low building covered with a barrel ceiling decorated in colour. There are indicated also a chancel screen in oak with a hanging rood and a north chapel. Altogether a modest and effective suburban church interior. Mr. James G. Fairley's "Completion of New Presbyterian Church, Mayfield, Edinburgh," is shown in a view from the west, with a tower at the south-west angle. The west front is a rather curious composition with large gabled and buttressed piers permitting only a small piece of the main gable to be revealed. The windows of this west front are too large for the composition, so that the whole can scarcely be regarded as a success. In Mr. Percy C. Boddy's "Chancel Screen, St. John's Church, Seven Kings, Ilford," we see an elaborate employment of Perpendicular detail with a rood, but a vital defect vitiates the design in the formation of the central opening by the bald and crude cutting away of the central mullion in an even-numbered series of arcades.

Mr. Gerald C. Horsley's "Church of All Saints, Hanley," is shown in a pencil perspective from the north-west. The design is remarkable for its departure from normal lines. The west end of the nave has an external pulpit with sounding-board over, and Renaissance detail is employed in these features, although the main building is treated with Decorated features and a well-designed tracery window of that period is placed over the pulpit. There is but one aisle—to the north—in the centre of which is the principal entrance, with a niche and figure above. At the east end of the aisle rises a square tower with a wooden bell-turret on its roof, and beyond the tower to the north projects slightly a transept. Without any evident strain we have a highly interesting and piquant, yet withal natural, design. The design for "Proposed Chapel," by Messrs. W. F. Harber & G. T. Power, is a study in the Byzantine manner, in which an octagonal plan with square projections on the cardinal axes forms a building of simple shape, which is treated with subdued polychromatic material externally and coloured decoration internally.

Mr. William A. Pite's "Church of the Good Shepherd, Ealing," is clearly a small and cheap suburban church of Gothic form with nave and north aisle and a turret for a single bell, modest, unpretending, and satisfying. "Holy Trinity, Lambeth: Design for Alterations," by Sir Charles A. Nicholson, Bart., shows an internal treatment with wood columns or posts and flat cambered roof, on which is indicated some coloured decoration. A framed wooden screen with rood figures is

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designed on simple carpentry lines to accord with the constructive timber treatment of the rest of the interior. The whole is an interesting experiment and one, we think, that points to a successful issue.

The drawing entitled "Catholic Church and Presbytery, Southwold," by Benedict C. S. S. S. and Beart-Foss, shows mainly the Presbytery with the square western tower of the church. This latter has a semi-octagonal turret in the centre of its western face, taken up above the parapet of the tower and finished with a spire. The Presbytery is a quiet and restful piece of domestic work. Mr. Charles E. Bateman's "Memorial Screen: Parish Church, Walsall," is a very elaborate piece of late Perpendicular detail with Renaissance motifs in the brattishing. The central opening is formed by truncating three bays of a continuous arcade with an excessively deep lintel. The attempt to get away from ordinary lines, though understandable, has scarcely attained a happy result. But it is not easy to design a chancel screen with a satisfactory avoidance of normal if hackneyed treatment.

NOTES AND COMMENTS.

ALTHOUGH the inception of the Design and Industries Association has come at an unfortunate moment, the crowded attendance at the opening meeting promises well for the interest aroused in the objects of the new Association. Lord Aberconway, in the chair, read a letter from Sir Hubert Llewellyn Smith, Permanent Secretary to the Board of Trade, who explained that State action in the matter of the closer co-operation of manufacturers, designers, and distributors was receiving the serious consideration of the Government before the outbreak of the war, and might even now have been in operation. Lord Aberconway said that it was evident from that letter that official sanction would be given to any well-directed efforts, and it was the object of that meeting to give direction to the efforts which so many were willing and anxious to make. Some might say that the present was not the time for such a movement as this; but on the contrary, he pointed out that when the war is at an end there will be a rush for production, and that money considerations will then be more potent than design. We must be prepared when the war is over with a systematised organisation which will be capable of dealing with the revived activities of manufacture. It is well known that English designs have remarkable originality, and the work of men like Morris are our precious possessions; but our manufacturers have left it to the Germans to develop these ideas on commercial lines. The Germans, by such organisations as the Deutsche Werkbund, have made it possible for the manufacturer to produce the best articles with the best designs. This organisation has its own elaborate annual report, and is in every way vastly ahead of us in commercial organisation of that kind. We must show the manufacturer how to turn the national genius to commercial account by promoting greater co-operation between manufacturer and designer. We must not neglect the education of the distributor, whose aim should be to put on the market not the very cheapest article, but rather the most suitable for its purpose and the most beautiful. Lord Aberconway instanced the modern battleship as an example of beautiful form, perfect strength and economy—and of perfect fitness. Let us apply the same idea to industrial productions as we have to our garden cities, printing, and engines. It is quite possible to produce cheaply without losing the solid qualities of design.

The question of housing for the working classes is one that was sufficiently acute before the war, but it has been intensified in no small degree by the decision of the Government not to lend money for housing and town-planning schemes, except in cases of absolute unemployment in the building trade in a particular district. The motives of the Government are perfectly sound. The wealth of the nation is required to finance the war, and every hale and suitable man is required for the battlefield or the munitions workshop. This is no time for luxuries, either for the individual or for the nation, and probably before very long we shall realise how profound is the need for rigid economy. Unfortunately, an effect of the stagnation in the building trade is that the serious shortage of working-class houses that already exists in many districts is becoming more pronounced, and the conference held last week at Leeds of representatives of local authorities declared that unless something is done we may be confronted shortly with a house famine that will menace the industrial efficiency of the whole nation.

As an example, the Lord Mayor of Leeds pointed out that at one time the number of houses erected annually in Leeds was three thousand. This dropped to about a thousand in 1907, and has gradually declined to 228 during the last twelve months. During the period from 1896 to 1906 considerable over-building took place. The period of over-building had now changed to one in the opposite direction; and, whereas in the year 1911 there were about seven thousand houses vacant, the City Engineer had ascertained by a recent census that this number was reduced to 2,492. On the cessation of hostilities it might be anticipated that some increase in building would take place. Referring to what Leeds had done in the way of rebuilding its central areas, the Lord Mayor observed that the re-planning, alterations, street improvements, &c., had led those who had given considerable thought to the subject to the conclusion that local authorities were not equipped with sufficient powers to deal with these matters. Under the Town-Planning Act it only remained for Leeds to map out the remainder of the vacant land in the city in such a way as to avoid the heavy improvement charges which had had to be faced in the older areas, and it seemed very desirable that smaller communities, which might in later years develop into big industrial centres, should take a larger view of their possibilities.

Mr. Henry Aldridge went so far as to suggest that the drinking habits and slackness of workers in the Clyde district, as compared with those of Portsmouth, was the direct result of the difference in housing conditions that existed between North and South.

The housing question occupied also the attention of a meeting at Birmingham last week of the Association of Midland Local Authorities, and Alderman Cook, who was re-elected Chairman of the Association, returning thanks, said he had been in close touch with headquarters that day, and he thought the outlook meant that further duties were likely to be thrown upon local authorities in the future. They would have to be prepared for that. Many authorities had received a circular from the Local Government Board, asking them not to incur any large capital expenditure or loan expenditure at the present time. Everybody felt the necessity of husbanding resources, but one question affecting a great many local authorities arose from the production of war munitions, which had led to a large influx into the industrial districts of working-class people, and the necessity for housing was growing very acute. He believed that was the case at Coventry and all round the Black Country, especially in the districts represented by the Association. It was a problem that would have to be faced. Private builders could not see their way to build at present owing to the high price of labour and materials; and it seemed to him local authorities would be faced with a similar situation when the war was over. The only plan he could see was a Government grant to meet the difficulty.

The Association of Old Students of the Royal College of Art, London, which claims to be one of the most fully and widely representative bodies of artists in the kingdom, "feeling the necessity that steps should be taken

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to initiate some form of action which would in a purposeful way tend to promote a greater elevation of artistic taste, decided at the annual general meeting to send a deputation to the President of the Board of Trade to express these views." They presented the following recommendations: 1. To arouse and quicken throughout all classes of the community a more intelligent appreciation of the value and necessity of art and art productions of every kind by an extended system of art education in all schools and colleges; and by holding regularly national exhibitions of art productions. 2. To co-ordinate the whole system of art education. 3. To bring all sections of art producers together, giving them unity of interest. 4. To call together a deliberative assembly of representative artists, art masters, manufacturers, distributors, educationists, and others, as a first means of considering the above proposals. 5. To hold a public conference to discuss these measures. In reply, the President said he welcomed the suggestions brought forward, and pointed out that one difficulty which had to be overcome before satisfactory co-operation between manufacturers and artists was established was the feeling which existed with some manufacturers that artists did not understand the economic conditions which attached to the workshops, but he hoped in the near future for a closer connection between art schools and the manufacturers. He stated that the Board of Trade and the Board of Education were anxious to promote exhibitions which would arouse interest in new industries, and which would restore the application of art to existing industries. The President concluded by saying that the Board were always willing to consider practical suggestions, and in cases where it was possible were prepared to adopt them.

An interesting account of a fourteenth-century ecclesiastic was given in a lecture at the Royal Institution on "The Archives of Westminster Abbey," by Canon E. H. Pearce, who said that from an examination of the documents in the Muniment Room it was possible to construct a record of one of the "obscure persons" of whom Dean Stanley spoke, Abbot William of Colchester. He was probably born in 1338, and some of his relations were poor enough to bring him a basket of poultry, some rich enough to receive from him a present of jewellery. His earliest appearance on the Westminster books was in connection with his ordination; and when, in 1361-2, he said Mass for the first time, three officers spent 1*s.* 7½*d.* each in bread and wine as a complimentary gift to him in honour of the event. In 1366 he was chosen by the Convent as one of two whom they were bound to send to Oxford to join other Benedictine students, and if his Latin prose did little credit to his University, he did learn how to deal with men. He was entrusted with the mission of taking the girdle of the Virgin Mary to expectant mothers, who were thus assured of safe delivery; and it was on record that in performing this service for the Countess of March he received 13*s.* 4*d.* from the Sacrist for his expenses, and spent £6 16*s.* 8*d.* on two horses. The Countess gave him £2, and she might be thought to have the best of the deal, but it should be remembered, said the lecturer, that William of Colchester could use the horses again, or sell them for the original price. By 1375-6 William had become Treasurer of the whole College, and his treasurer's accounts, still in existence, gave details of the pancakes supplied to the brethren during fifty-two days of a certain year; and Canon Pearce suggested that the present scramble for the Westminster pancake was really a protest against this monotonous fare. William was sent on several missions to the Pope in connection with a lawsuit, and the accounts showed how he had to sell his horse for 22*s.* 2*d.* and borrow money at Bruges, and of other difficulties on the way. As Archdeacon, William had to deal with the *post-mortem* effects of one of the brethren, and the document, still extant, showed how the latter in life had the use of a hall, a pantry, a bedroom, with a white bed, a tester, and two mattresses, a kitchen, and a study containing three maps and, as if to signify that modern literature was not excluded, a copy of Marco Polo. Eventually William of Colchester was elected Abbot, notwithstanding the opposition of the King, and in this position, as in others, he won the respect and confidence of his fellows.

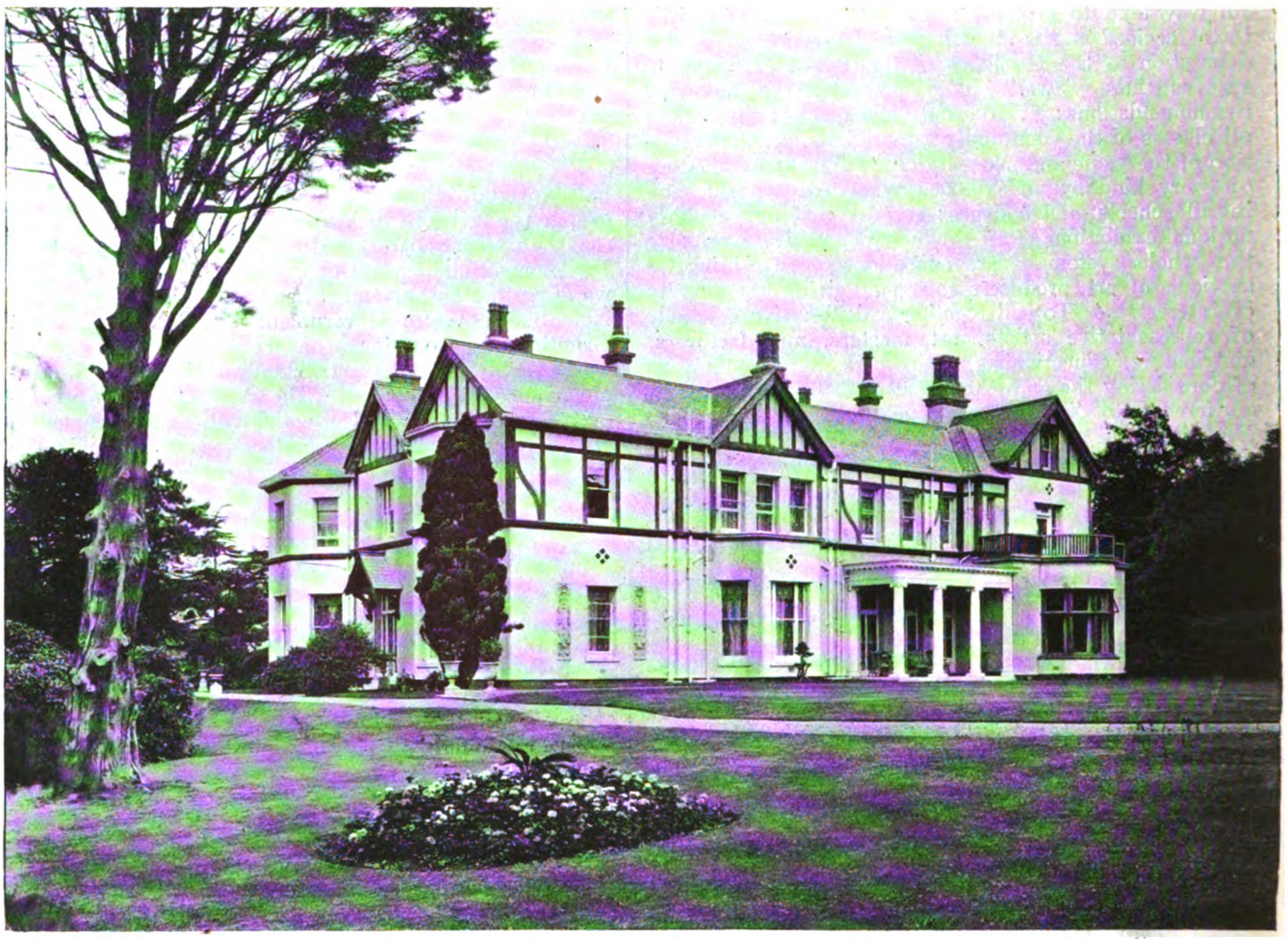
The stress of war finance has not induced the Australians to follow the example of our Home Government, despite the fact, of which many of our readers are aware, that the international competition for new Commonwealth Parliament Buildings at Canberra has been postponed, for we learn that an agreement has been signed between the New South Wales Government and Messrs. Norton, Griffiths & Co. for the construction of public works to the value of £10,000,000 within five years, commencing from July next. The contracting firm undertakes to finance the works, which will be constructed in accordance with plans and specifications drawn up by the Department of Works, the Government paying 5 per cent. on the cost of construction, paying for land, and providing all materials. The works embrace ten railways, including a new Sydney scheme, and the completion of the north coast line, two water conservation schemes and harbour works, and the enlargement of the main canal of the Murrumbidge irrigation area. It is agreed that current award rates will be paid to the employees. The firm also undertakes to underwrite and assist the Government to raise certain loans periodically. Provision is made with reference to disputes and arbitration, the Minister of Works retaining the right to cancel the agreement so far as it relates to any particular work found by arbitrators and an umpire to be extravagantly performed.

Congress after congress dealing with public health questions has met in England and on the Continent. During the course of such proceedings convincing arguments have been adduced and emphatic resolutions passed advocating the institution of a Ministry of Public Health. Nevertheless (says *The Lancet*) nothing of the sort has been done in any of the countries concerned. Will the war now bring about what all these assemblies, some of them of great importance, have failed to accomplish? There are rumours to that effect.

With regard to France, twenty years ago Dr. Pierre Bonnier studied and discussed a scheme for a Ministry of Public Health with his party colleagues, M. Millerand and M. Jules Guesde. (It is significant that to-day the former is Minister of War and the latter a member of the French Government.) M. Vaillant, the deputy who, when an exile here, qualified as a member of the Royal College of Surgeons of England, drew up a scheme more recently which was submitted to the Chamber of Deputies for the creation of a Ministry of Public Health. Nothing was done then, but the signs are now propitious, and if the reform comes it may come all in a moment. At congresses innumerable, and on many public occasions, more was said for years against absinthe than has ever been said in favour of a Ministry of Public Health. To-day the sale of absinthe has been abolished with a stroke of the pen. Russia, which abolished vodka with similar ease and expedition, is also stated to be contemplating the possibility of calling into existence a Ministry of Public Health, and from Roumania we hear of the same intention being manifested.

The swift compliance with the demand for a Public Health Ministry in France would have its origin in the circumstances of the war. The mobilisation of the ambulance services in France was not at first as satisfactory as might be desired. Centralisation with expert knowledge would have done better. And if to-day we hear that proposals have once more been brought forward in France to instal a new Minister of Public Health, it is in order to have someone who will be in authority over civil State medicine and give judicial help to military medicine, Red Cross work, and national and international public health

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KEMNAL MANOR, CHISLEHURST.—Mr. Victor Wilkins, Architect. (See Illustrations.)

services. Thus it may happen that the stress due to the war will bring into existence in France, and with but little difficulty or resistance, what has been talked about in vain for so many years. If a Ministry of Public Health is instituted in France, it may not be long before this country follows suit.

The tendency of art amongst real artists is undoubtedly to become "high," and it is probably the feeling of this fact that was at the bottom of the mind of a leader writer in the *Times* when he wrote: Men are the artistic sex, but it is women who show them what to be artists about, who call them back from those abstractions towards which all male art is tempted. The male artist by himself will fall to thinking of composition, colour, form, metre, and other words. His wife draws his attention to things, because they interest her more than his art. His art is a kind of talking to her, and she has no patience with it unless it is talking about something, and not mere talking for talking's sake. She, in her heart of hearts, would rather be a mother than an artist, would rather have healthy children than fame; and the man is a pedant who despises her for that preference. She is not a materialist; for materialism is all man's talk, and he talks himself into it when he feels mischievous. For her facts, and especially children, have a spiritual significance, without any need to argue about it; and she acts as if they had a spiritual significance, while the man is asking himself whether they have any. She does not think it is so important to answer the questions raised by life as to keep life going in her own family. And man looks at her and sees the play and mystery of life in her that he might miss in himself. If only he would look at her more constantly and listen to what she has to tell him, he would be a better philosopher, a better artist, and a better statesman.

WAR ITEMS.

A proposal is on foot to organise an Imperial Volunteer Vidette Corps, the object of which is to counteract enemy espionage by creating an extensive spirit of watchfulness, observation, and alertness, by private organisation and voluntary effort. The Corps to be is open to every man or woman of British birth, over the age of eighteen, on a minimum subscription of sixpence, and the intention is to have every patriotic man and woman in the country at work for the safety of the realm.

No active work is asked, but the idea is that every Vidette (member of the Corps) should keep his eyes and ears open for anything that might militate against the welfare of the country, and immediately on hearing such news to inform the headquarters of the Corps. The information would then be verified, and if found to be really of value by the Council it would be passed to the proper authorities. Workers on being enrolled will receive a number under which they can make any communication to the general headquarters in London. This will obviate the necessity of their going to the local police stations with any information they think should be laid before the authorities. No member in a town will know other members of the Corps and no member will be known as a member except by the general headquarters, so that the name of the informant is never divulged.

It is estimated that at least half a million members would be speedily enrolled, and this number of members working for the cause must inevitably find out some information of value. Even if no *direct* good is done, the very fact that there is this huge number of members on guard will tend to reduce the value of the enemy espionage.

The enemy system of espionage must be met with a system equally as strong, and this scheme will not only tend to find out the alien spy but also to discover people

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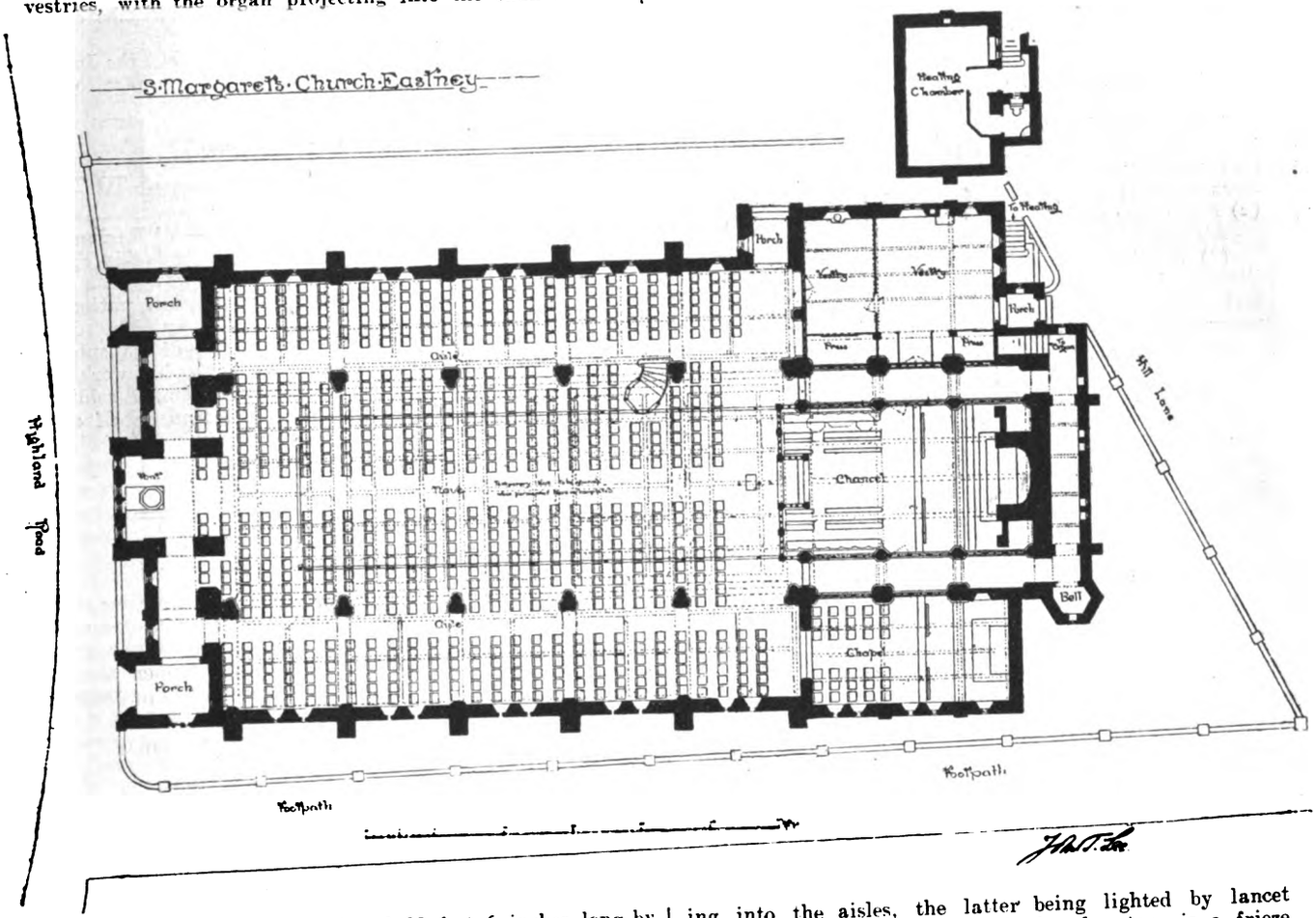
of other nationalities whose sympathies are not with us, and who, therefore, should be kept under strict surveillance.

All persons willing to join this Corps are requested to send their names at once to Mr. Frederic W. Holworthy, 33 Tweedy Road, Bromley, Kent, and, if the response is satisfactory, immediate steps will be taken to form a strong committee, and the Corps will go into action at once. Already it has received many adherents, and it is hoped to make a very early start.

ILLUSTRATIONS.

ST. MARGARET'S CHURCH, EASTNEY.

THIS church consists of a chancel of three bays, 34 feet long by 20 feet wide and 43 feet high, with an ambulatory 5 feet wide, screened on each side in the arches of the arcades, and continuing round the east end behind the altar. The chancel is lighted by a lancet window in each of the bays north and south. Beyond the ambulatory on the north are vestries, with the organ projecting into the chancel over-



head, and on the south a chapel 28 feet 6 inches long by 14 feet wide and 20 feet high. The reredos, 29 feet high by 13 feet 6 inches wide, is recessed for an altar 9 feet long curved at the back over the retable and domed at the top over the subject of "The Majesty." The surround of the reredos, with its flanking piers for standard lights, is plated with sheets of brass riveted on the border, and blocks of the same having acanthus and scroll ornament in low relief. The retable is of white marble, with narrow vertical panels of pale green marble carrying a plain brass cross, the two altar lights being placed on the altar itself and the seven sanctuary lamps suspended from the roof in two horizontal tiers. The subject of "The Majesty" in the reredos is treated in tempera thus: The figure of Christ is crowned, with the orb and sceptre, robed all in white, and seated on a throne of gold, beneath which arches the rainbow. The figure of Christ has the feet resting on the globe, and from out of this run downwards in winding course through a field or ground of vine ornament the four rivers of Paradise. At the four corners of the throne stand the emblems of the four Evangelists, forming in general outline behind the figure of Christ a large vesica of intense red. Somewhat lower than "The Majesty" sit, in two tiers, the four-and-twenty Elders, whilst above them is a group of minstrel angels, their wings reaching into the domed top of the reredos. At the very apex of the dome is "The Dove," with rays descending therefrom. The altar is to be of the same material as the reredos, but lacquered in silver grey. The altar-rails are in oak, with the emblems of the Evangelists repoussed in metal. The lectern is in brass, with the following emblems on the four cardinal sides—namely, the Pelican with the nails and scourge, the Dove with the lily and the lamp, the Fish with the anchor and ship, and the Lion with the crown and palm. The nave, 85 feet long by 35 feet wide and 43 feet high, is subdivided into five bays by stone arches springing from the floor across the nave. The roof, following the curve of these cross-arches, is divided into eighteen panels in each bay, the lower three panels throughcut being filled with winged and vested figures of the hierarchy of Heaven, the first bay of the roof being shown over the chancel arch in the view of the interior, with an important cross in metal suspended beneath. The clerestory consists of seven lights in each bay, the three centre lights being glazed and surrounded by an arch also springing from the nave floor, with subsidiary arches beneath opening into the aisles, the latter being lighted by lancet windows in each bay. Beneath the clerestory is a frieze with verses in Latin from the Te Deum. At the west end is a baptistery in the centre, connected by a iobby on each side with the north and south porches at the ends of the aisles. Two bays of the nave are now built over the temporary church, with two bays of the nave aisles on each side. The portion of the temporary church beneath the permanent nave will be removed as each new section of the church is built. The church externally is built of red brick with stone dressings, and plastered internally also with stone dressings. The incumbent is the Rev. W. A. King King, the church being built by Mr. Henry Jones, of Southsea, from the designs of Mr. John T. Lee, architect. There will be accommodation for 800 adults when the church is completed as shown in our illustration with the accompanying plan.

KEMNAL MANOR, CHISLEHURST.

THIS house occupies the site of the old Manor House, the earliest existing record of which dates back to 1250. The present owner, Mr. James H. Rosenthal, purchased the estate in 1911, comprising 111 acres of land, and extended

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and modernised the house. The drawing-room was added to, making this room 45 feet by 20 feet. Additions were made to the library and music-room. The lounge hall and music-room are panelled in oak, and the dining-room in mahogany. A new oak staircase leads out of the hall to the first floor, and a wide gallery runs all round the hall, serving all the principal bedrooms. The bedrooms on the first floor are arranged in suites with dressing-rooms and bathrooms attached to each. The elevations of the house were built of brick, and when the alterations were made these were rough-casted and treated with half-timber, giving the house a more interesting character. The architect was Mr. Victor Wilkins. The main contractors were: Messrs. Chas. Brightman, of Watford; hot-water supply and heating, Messrs. Burroughes & Sons, 143 Holborn; fibrous plaster decoration, Messrs. De Jong & Co.; parquet and hardwood floors, Turpin's Parquet Flooring Company; vacuum-cleaning installation, the British Vacuum Cleaning Company; water-softening apparatus, Messrs. Lassen & Hjort.

HENRY SAXON SNELL PRIZE.

The Henry Saxon Snell Prize was founded to encourage improvements in the construction or adaptation of sanitary appliances, and is to be awarded by the Council of the Royal Sanitary Institute at interval of three years, the funds being provided by the legacy left by the late Henry Saxon Snell (Fellow of the Institute).

The prize will consist of fifty guineas and the silver medal of the Institute, and is offered in the year 1915 for an essay on "Suggestions for Improvements in the Sanitary Arrangements and Appliances suitable on Board Ship for (*a*) Passengers and Crew; (*b*) Cattle and other Live Stock."

Attention should be given to the following points:—

(1) *Ventilation.*—There should be perfect and even ventilation of small places without a draught, easily regulated and adaptable for extremes of climate. The entry of sea water should be obviated.

(2) *Heating and Cooling.*—This may be combined with No. 1.

(3) *Sanitary Conveniences, Urinals, &c.*—These in the case of ships' crews should be suitable for rough usage. The pans or troughs should not be liable to be soiled. It should be borne in mind that the ship is liable to considerable movement in a heavy sea way, and spilling of contents of closet pans is to be avoided.

(4) *Water Supply.*—Filters, condensers, aëration and cooling plant, storage, ballast tanks, &c. Baths and flushing tanks for closets. A sufficient flush of water should always be available, either at sea or in port, and independent of the working of the ship's engines.

(5) *Sleeping Quarters.*—Attention should be paid to the arrangement of sleeping bunks, so as to increase the available amount of cubic and superficial space - *e.g.*, by folding up or other means. They should be so constructed as not to harbour insects, nor to interfere with lighting and ventilation.

(6) *Store and Food Rooms.*—Should be rat-proof, and ventilated.

(7) The ventilation and regulation of temperature in the space devoted to cattle and other live stock, chiefly horses, cattle, and sheep; construction of stalls; drainage and facilities for removal of dung. The arrangements suggested should apply to both permanent and temporary occupation.

It is essential that the important wishes of the ship owner shall be considered.

General Conditions.

1. The essay to consist of not more than 5,000 words, to be typewritten on foolscap, one side only, and to be illustrated by drawings or sketches. General drawings or sketches to be on a scale of one-tenth of an inch to 1 foot, and drawings of details to be on a scale of ½ inch to 1 foot, or real size.

2. Two competitors of different professions or crafts may join in sending in an essay and drawings.

3. Essays must be delivered on or before November 1, 1915, addressed to the Secretary of the Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.

4. The essays are to be submitted without the name of the competitor, but with a motto legibly marked on the right-hand lower angle of the first sheet, and to be accompanied by a letter containing the competitor's name and address, which is to be enclosed in an envelope sealed with a blank seal, and having on the outside "The Henry Saxon Snell Prize," and the same motto as that attached to the work submitted. The essay and sealed envelope must be enclosed in another envelope, bearing the words, "Henry Saxon Snell Prize" and the competitor's motto at the right-hand lower angle, and must be directed to the Secretary of the Royal Sanitary Institute.

5. Should none of the essays be considered of sufficient merit or importance to deserve the prize offered, the Council reserve the right of withholding the award.

6. In the event of two essays being of equal merit, the prize may be divided.

7. The essay or essays to which the prize is awarded are to become the property of the Institute.

Should the Council decide to publish the essay or essays to which the prize is awarded, notice will be given to the competitor or competitors in order that patent rights may be secured, if desired, for any of the appliances mentioned in the essay or essays.

8. The carriage of the essays to and from the office of the Institute, and all expenses incidental thereto, must be paid by the competitor. Unsuccessful essays will be returned on application, on the production of a formal demand within a period to be specified after the close of the competition.

9. Due care will be taken of all essays, but the Institute will not be responsible for any loss of, or damage to, them while they remain in its keeping.

ART IN LONDON.

THE BRANGWYN GIFT OF ETCHINGS TO THE FRENCH NATION.

It is in accordance with the best traditions of England and France to exchange graceful courtesies, and this country was warmly appreciative when M. Rodin presented a collection of his sculptured works to the English nation. A return compliment was recently made by Mr. Frank Brangwyn, A.R.A., which took the form of "a specimen of the whole of (his) etched and lithographic work as a mark of homage to France and her splendid soldiers." That Mr. Brangwyn's offer was accepted on behalf of the National Museums may be readily conceived.

The specimens now shown by the Fine Art Society in New Bond Street are duplicates of those selected for special exhibition in one of the galleries of the Luxembourg Museum, and we have no doubt as to the high praise they will for the most part receive from the British public and other visitors.

To architects the chief appeal will be the sympathetic rendering of the various buildings; as distinct from the ordinary "artists' architecture," as architects' landscape accessories are distinct from realism. Perhaps the fact that the artist's father was an architect may account for the son's power of rendition. And Mr. Brangwyn's technique is notably good, irrespective of his subjects; regard, for example, "Cannon Street Station (Exterior)," a really fascinating drawing of a most uninteresting object, and yet, for all that, the artist has produced a veracious sketch. "The Demolition of the Post Office" is also notable, though in this case St. Paul's Cathedral should have been sent further into the background. "The Pont Neuf, Paris," is reminiscent of Piranesi's touch, and its neighbour, "The Bridge of Sighs, Venice," is a subject which lends itself to, and here receives, the most sympathetic treatment. The collection as a whole is full of charm, nor is this surprising when we remember that it consists of works specially selected for exhibition from amongst the complete gift of the artist. But we may direct most appreciative attention to "Old Houses, Ghent," "Bridge Building" (11), "Bridge Builders" (24), "Old Houses, St. Cirq" (51), "The Mill Wheel, Montreuil," the sketches depicting the breaking-up of the *Hannibal* and the *Duncan*, "Blacksmiths," "The Bridge, Toledo," and "On the Road to Figeac." As a rule, Mr. Brangwyn is not pleasing in his portrayal of the human countenance or in his method of delineating trees, though there are some pleasant exceptions. Some interesting sketches of Messina after the devastating earthquake are included amongst the exhibits. The six woodcuts "At the Front" and "At the Base," illustrating in two colours the work of the Red Cross, do not commend themselves to our notice; but as in such a good show we are loth to conclude on a note of dispraise, let us direct appreciative attention to the magnificent sketches of the "Building of the Victoria and Albert Museum" and "The Shrine of the Immacolata, Messina."

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DESIGN FOR THE LAY-OUT OF A PARK AND RECREATION GROUND.*

By W. HENRY PRICE, City Engineer's Office, Birmingham, and ALFRED J. PRICE, A.M.Inst.C.E., Borough Engineer's Office, Eccles.

IN the design accompanying this description an effort has been made to provide a lay-out for a park and recreation ground which will not only embrace and preserve the best natural features of the site, but will also meet the new conditions called for by the great popularity of all outdoor sports, and the more intellectual forms of recreation in which the naturalist, botanist, art student, scientist, littérateur, or music lover may join.

The main avenue and stream, which by the conditions of the competition run diagonally across the site, intersecting each other at the centre, dominate the whole design; and the various roads, gardens, and sports grounds are arranged so as to fit in conveniently, and harmonise as far as possible with the lay-out of the main avenue and stream.

The main avenue is 80 feet wide, and has two lines of roads each 30 feet wide, divided by a central 20-foot plot of flower-beds, and bounded on each side by a 30-foot grass plot, and a 20-foot footpath, shaded by a double line of lime trees, as shown on the section.

Two secondary circular roads, of the same radius and 40 feet wide, skirt the edges of the park, meeting tangentially at the central circus and clock tower; and with the connecting 40-foot roads give convenient access to the park by the subsidiary gate entrances.

There is also a 40-foot road on the north side of the lake, and these roads, which are essentially carriage drives, and the carriageways in the main avenue, are to be laid with tar macadam, this being the most suitable material for the light motor traffic which has practically superseded horse traffic.

Tar macadam is also desirable from the hygienic and economic point of view, as it protects pedestrians from the dust nuisance and is more durable than the gravel, of which the narrower roads and walks are formed.

The stream, which at the north-east angle of the park is narrow and irregular, gradually widens out at the centre of the park to a width of 100 feet, and passes under the central circus by a double line of water courses, which are culverted. These streams emerge at the centre of the road forming a circular ornamental basin, practically surrounding the clock tower, and then passing by another double line of culverts to the south side of the circus, emptying into the boating lake of about 12 acres.

This lake will to a great extent follow the natural contour of the ground, and will have a depth varying from 18 inches at the sides to 3 feet in the middle. The excavated material will be useful for forming islands and mounds and undulations in the woods and shrubberies enclosing the lake. The bottom of the lake is to be concreted for about ten yards from the edge, and puddled for the rest of the site if required.

A waterfall is formed on the upper part of the stream near the botanical gardens, and a weir to hold the lake up to the required level is constructed at the south-west portion of the stream near the lower part of the lake.

Open-air baths and covered swimming and slipper baths for ladies and gentlemen are formed on the banks of the lake, and a boathouse with landing stage, terrace, and café are also located on the north side of the lake.

The park is surrounded by clumps of forest trees and shrubs, and the stream and lake are also enclosed with woods, which not only add to the picturesqueness of the stream, but also provide shady walks and glades, and shelter from sun or wild weather.

Ornamental flower gardens are formed near the bandstand, museum, cricket pavilion, and palmhouse; and botanical gardens for tropical and other rare plants, with suitable glasshouses, pergola, trellis work, and roseries are located to the north of the stream and clock tower.

A palmhouse and ornamental gardens, in which a sundial and lily pond are provided, are placed to the south-east of the lake.

Zoological gardens adjoin the botanical gardens, and are arranged with open-air enclosures for the animals to roam about freely, the dens or lairs being formed in the rockwork under the hill. A bear pit, with access from the open-air enclosures and lairs, a monkey-house, aviary, aquarium, and reptile-house are also provided.

A sunk bandstand is located to the north of the clock tower, and a concert hall, which may be used by the band in bad weather, or for classical or other concerts, is provided as part of the museum and art-gallery buildings.

The provision of art galleries and museums in public parks has been largely adopted of late years, and the study of art and science has an additional interest amid such pleasant surroundings.

In a park of 240 acres it is not only possible, but desirable, to make provision for the majority of the recognised forms of sport and athletics. If we are to take an honourable position in the Olympic games, or encourage and help the Boy Scout and other similar movements, it is necessary that we should have an Olympic centre, which will enable our athletes of the younger generation to emulate the deeds of our immediate ancestors.

The Stadium is large enough to accommodate from 120,000 to 150,000 persons, which, in these days of Final Football Cup-ties, is not too large a size. It provides two large covered seated stands, with uncovered standing accommodation at the ends. A gymnasium, which can also be used for dressing or drill purposes, adjoins the northern stand. A swimming pond for swimming and diving contests, a concrete cycle track, a cinder track for running, with turf enclosure for running or football, are provided in the Stadium. The covered stands contain refreshment-rooms, club-rooms, dressing-rooms, and lavatories, and the lower portions of the open stands could be utilised for garages, refreshments, stores, or conveniences.

Four public and two club bowling greens, eighteen public and twelve club tennis courts, together with croquet lawns, are provided.

A plot of 20 acres is provided for cricket, football, and polo, with a large pavilion to accommodate the various clubs using the ground.

A clock and observation tower with electric lift is placed in the central circus, which is easily seen from all parts of the park, and which forms the focal point of various roads, and makes a pleasing vista from both ends of the main avenue and lake.

Boys' and girls' playgrounds, in which would be placed swings, parallel bars, and the usual simple gymnastic apparatus found in these grounds, with shelters, &c., are provided, together with a paddling pool with guard rail in the lake, for the younger children.

A number of shelters are placed at suitable points in the park, and the sanitary conveniences are usually screened by shrubberies. Besides the café at the boathouse and refreshment-room at the Stadium, a tea-house is provided on the largest island at the south end of the lake.

Two park-keepers' lodges are built at the entrances to the main avenues, and it would, in these days of suffragette outrages, be advisable to provide living accommodation for some of the park attendants in the cricket and tennis pavilions, boathouse, baths, tea-houses, Stadium, and art galleries.

The park entrances have wrought-iron gates, with stone piers of a suitable architectural character, and the smaller gates and railings would harmonise with them.

The detail drawings, though only drawn to the small scale of 20 feet to an inch, are sufficiently clear to indicate the architectural character of the buildings, and the engineering and landscape details. While an attempt has been made to provide in the art gallery, museum, clock tower, and bandstand buildings of a Classic character suitable for the purpose they serve, the Stadium, cricket pavilion, boathouse, and other buildings have been designed in a somewhat quieter and more modern style of architecture.

The domes on the concert hall, clock tower, and bandstand are formed in concrete and covered with copper, and the palm-house and conservatories in the botanical gardens are of glass with steel framework, which are materials, perhaps, not allowing of the best or purest style, but are still of the most useful character for the purpose they serve. The designs are sufficiently varied to avoid monotony, and it is hoped that they do not offend any of the recognised canons of architectural taste.

The question of cost cannot be ignored, even in a competition such as this, and while an effort has been made to avoid anything of a cheap and shoddy character, yet

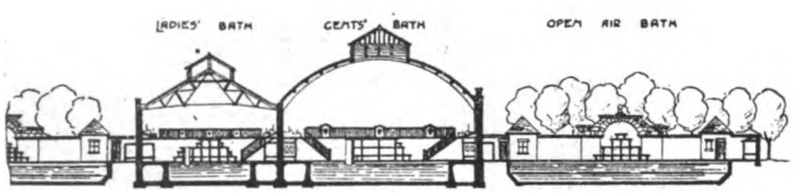
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*** Awarded First Prize for Design for Laying-out a Park and Recreation Ground under the Premium Scheme, 1913–14, of the Municipal and County Engineers.**

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DETAILS
FOR A
PARK AND RECREATION GROUND

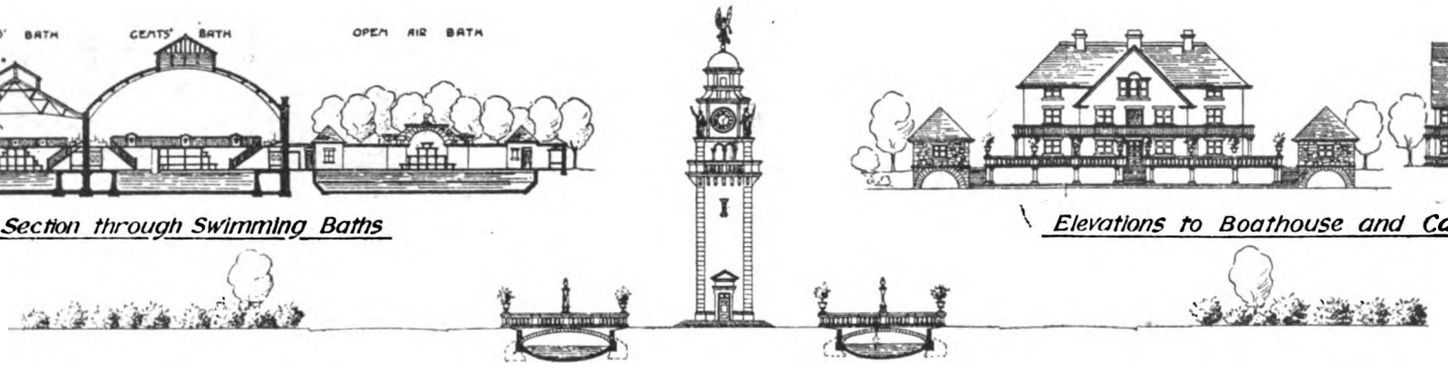
Scale



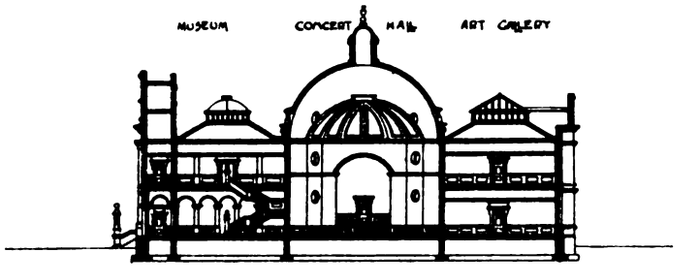
Section through Swimming Baths



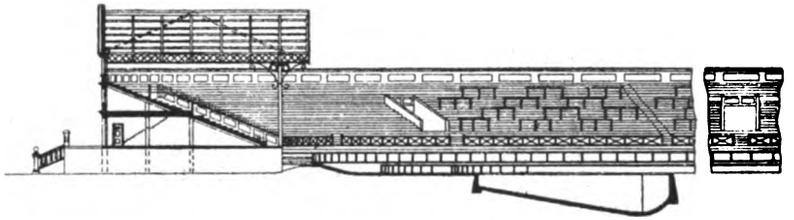
Elevations to Boathouse and Café



Clock Tower

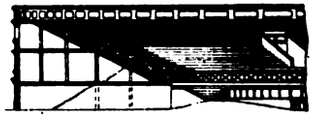


Section through Museum, Concert Hall, &c.



Grand Stand

Swimming Pond



Open Stand

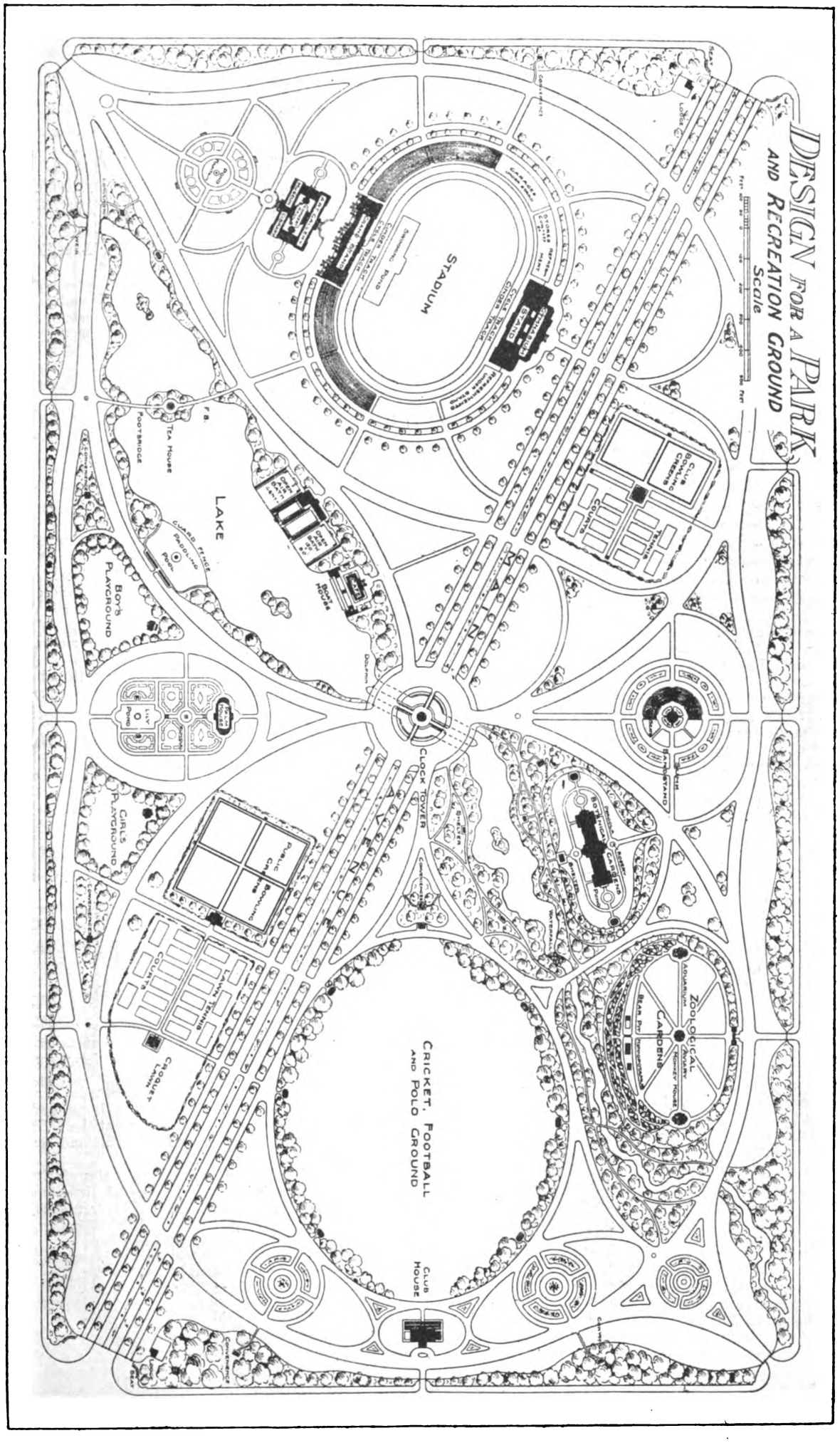


Front Elevation to Museum and Library



Front Elevation to Stadium Grand Stand

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extravagance in the buildings or lay-out has been carefully avoided as far as possible, and it is hoped that a design for a park and recreation ground worthy of a large and important town has been provided.

LIME CONCRETE IN THE EAST.*

By E. A. W. PHILLIPS, M.Inst.C.E., Retired Superintending Engineer, Burma Public Works Department.

STONE lime of great purity, and consequently non-hydraulic, is used largely in India and Burma, and engineers have learnt to place considerable confidence in the material. To enable it to set under water, it is mixed with "soorkhee," the homra of Egypt.† To the present day engineers in India do not know exactly how much soorkhee is required by each kind of lime, and this ignorance is due to the want of scientific laboratory tests, of the kind so frequently made in Europe. It seems no advantage to send lime and soorkhee to England to be tested, since the difference in climate, the sea voyage, and the lapse of time in transit might vitiate the results. Conservative Indian opinion, based on long experience, approves of a mixture of a half-part of under-burnt with a half-part of well-burnt soorkhee to one part of slaked lime and one part of sharp, clean sand, all measured in bulk, dry. The materials are thoroughly incorporated and ground in a mortar-mill, either under one wheel pulled round a circular trough by a bullock, or in a pan-machine under a pair of wheels. The mortar should be a thick reddish paste, in which the particles of lime cannot be distinguished by the naked eye. A mortar made in this way sets very well indeed in still water, but it sets comparatively very slowly, and some engineers (the author included) add, when necessary, a proportion of Portland cement to the mixture. The introduction markedly hastens the setting to an extent depending on the proportion of cement to lime. One part cement to one part lime by volume sets apparently as quickly as cement mortar. In the early stages of setting the strength of the concrete is much increased, admitting of early handling and removal of moulding boards. The addition of cement preserves soorkhee mortar in wet foundations from the evils of percolation, and the cement, besides, seems to have a chemical (?) effect on the lime, fixing the particles and aiding in a more solid set.

First-class soorkhee mortar, several centuries old, it has been asserted, exceeds Portland cement mortar, 1 to 3, in strength and impermeability, and is said to be often equal to 1 to 2½. In regard to economy there is no comparison in Rangoon, cement costing (1909) about two rupees per cubic foot, and lime only three-tenths of a rupee per cubic foot. Further, in comparing the two classes, it has to be remembered that while native Indian masons are exceedingly clever in dealing with lime, they often make bad mistakes in dealing with Portland cement, and have to be specially taught its use, and carefully watched besides, as they are stupidly stubborn.

Where a mortar mill cannot be obtained, or when the work is too small to justify the expense, stone lime is thoroughly slaked by being steeped for from twenty-four hours to a week or more in fresh water, being kept constantly covered and stirred up at intervals with a rod. The result is a perfectly slaked lime, and a breaking up of all but the very hard particles. The wet lime is first mixed thoroughly with sand, the particles of the sand tending to still further break up and subdivide the lime. Soorkhee, very finely hand-pounded and screened, is then added in small quantities, and if the operation is properly done, it should be a little difficult to detect that the mortar has not been prepared in a mill. This is the best native Indian practice when a mill cannot be got. Tradition asserts that the stone lime in the Táj Mahál of Agra was steeped in water nearly a year before use.

A suggestion has been made in *Indian Engineering* to apply the term "béton" to mixtures with both cement and lime, reserving the term "concrete" for the usual mixtures. The usual classification for cements and limes is:—

1. Portland cement.
2. Natural cement.
3. Puzzolan cement.
4. Hydraulic lime.
5. Common lime.

With all the above, concretes can be formed, either hydraulic or non-hydraulic, and it is proposed that the term "béton" be reserved for all mixtures of 1, 2, or 3, with either 4 or 5, in forming mortar.

The author has employed the following mixtures in practice, obtaining exceedingly good, reliable, and economical results in all sorts of places, and especially in bad foundations:—

Béton, 1 : 1 : 3 (Equivalent).

1 part cement
1 part lime
1 part soorkhee
1 part sand
6 parts aggregate
} all measured dry.

Béton, 1 : 2 : 4 (Equivalent).

1 part cement
1 part lime
1 part soorkhee
3 parts sand
8 parts aggregate
} all measured dry.

Béton, in damp foundations (1 : 3 : 5).

1 part cement
3 parts lime
3 parts soorkhee
5 parts sand
20 parts aggregate
} all measured dry.

In all the above the author employed milled mortar if possible, sifting the cement in last of all, and thoroughly incorporating it with the mortar, as shown by uniformity of change in colour.

In above-ground work, where the free lime will be air-set, the soorkhee might be omitted, in which case two mortars might be made, one lime and sand, and the other cement and sand, in any required proportion, and mixed together.

It is not quite certain, however, that such mixtures will not be set hard even under water. The author has made no experiments to prove this.

In dry climates it is essential to keep hydraulic concrete drenched with water, and covered from the direct rays of the sun. The loss of strength in hastily dried concrete or béton is *enormous*; and nothing is so easy, in the East, as to destroy good material in this way. In the dry season, in the tropics, it is as necessary to take as much care of concrete and to protect it as carefully as a young lady should care for and protect her complexion. The author speaks feelingly from experience, as he has seen so much work, executed with first-class material, in a thoroughly workmanlike manner, ruined because the contractor grudged a trifling expenditure in keeping it wet. Béton especially needs slow and long seasoning, and six months is not too long a period in making blocks of the 1 : 3 : 5 mixture given above. The blocks should be removed from the moulds as soon as they can be handled (twenty-four hours usually), and placed at once under wet earth or sand, kept at all times wet for six months if possible, and three months for certain.

Mr. Phillips then proceeded to describe a variety of tests which he and Mr. H. Kempton Dyson (secretary of the Concrete Institute) had carried out at the L.C.C. School of Building at Brixton on lime and Portland cement concrete at the age of six months.

The Associated Portland Cement Manufacturers had already experimented with mixtures of lime and cement, and of lime, cement, and sand. Their results are most interesting:—

Effect upon Setting Time.

	Initial Hrs.	Initial Min.	Final Hrs.	Final Min.
Neat Cement	1	20	5	30
99·5 parts cement, 0·5 slaked lime	1	15	4	55
99·0 parts cement, 1·0 slaked lime	1	12	4	52
98·0 parts cement, 2·0 slaked lime	1	5	4	50
95·0 parts cement, 5·0 slaked lime	1	2	4	47

* Abstract of a Paper read at the closing meeting of the Session of the Concrete Institute.

† "Soorkhee" in India is finely powdered red brick.

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From these figures it will be seen that the addition of hydrated lime appears to have little effect on the setting time of cement (only slightly quickening it), and these results are confirmed by others.

Tensile Strength of Cement Mortar with Various Proportions of Lime added.

3 parts sand to:—

	Lb. per square inch			
	3 days	7 days	28 days	3 months
1 of cement	175	255	263	328
1 of (0·95 cement, 0·05 lime)	143	198	290	333
1 of (0·9 cement, 0·1 lime)	185	213	304	347
1 of (0·85 cement, 0·15 lime)	144	222	330	382
1 of (0·80 cement, 0·20 lime)	110	193	241	309
1 of (0·70 cement, 0·30 lime)	83	183	200	238

It will be seen from the above figures that the substitution of hydrated lime for more than 15 per cent. of the cement effects an appreciable reduction in the strength of the mortar. The results are not concordant, but, on the whole, the use of smaller percentages seems to be, if anything, beneficial to the strength after twenty-eight days. The addition of hydrated lime made the mortar work "fatter," or freer.

The experiments which the A.P.C.M. from time to time carried out in connection with the waterproofing of Portland cement concrete have shown that the addition of a small quantity of slaked lime is, undoubtedly, beneficial in this connection. In one test the amount of water which percolated during twenty-four hours, under a pressure of 50 lb. to the square inch, through a slab made with three parts of sand to one of cement:—

First slab	110 c.c.
Second slab	120 ,,
	115

Amount of water which percolated during twenty-four hours, under a pressure of 50 lb. to the square inch, through a slab made with three parts of sand and one part of a mixture of 0.97 cement and 0.03 slaked lime:—

First slab	4 c.c.
Second slab	10 ,,
	7

CONCRETE TESTS.

At the L.C.C. School of Building two sets of tests, Nos. I and II, were made with béton (1 : 2 : 4 equivalent); one set, No. III, with béton (1 : 3 : 5); and one set, No. IV, with a scamped mixture supposed to be béton (1 : 3 : 5). To compare this béton with Portland cement concrete, two more tests were made, No. V (1 : 2 : 4) and No. VI (1 : 3 : 5).

ANALYSIS OF CONCRETE TESTS.

Test No.	No. of Samples	Proportions: Cement	Remainder	Cementing Material	Remainder	Mortar, less Sand	Sand and Shingle	Mortar	Coarse Material	Average Strength in lb. per sq. inch at 6 months
I...	4	1	13	2	12	3	11	6	8	2,168
II...	4	1	13	2	12	3	11	6	8	1,890
III...	5	1	31	4	28	7	25	12	20	817
IV...	3	1	40	4	37	6	35	13	28	795
V ...	2	1	6	1	6	1	6	3	4	3,663
VI...	3	1	8	1	8	1	8	4	5	3,117

MORTAR TESTS.

No. VII.—1 cement, 1 white lime, 1 red soorkhee, 6 sand.

No. VIII.—1 cement, 1 grey lime, 1 red soorkhee, 6 sand.

No. X.—1 cement, 1 white lime, 1 burnt gault, 6 sand.

No. XI.—1 cement, 1 white lime, 1 stock brick, 6 sand.

No. XII.—No cement, 2 white lime, 2 red soorkhee, 3 sand.

No. IX.—1 cement, no lime, no soorkhee, 3 sand.

The idea was to test 1 : 3 mortars of all kinds as far as possible. It will be noticed that the chief difficulty was the classification of soorkhee. Is it part of the sand, or part of the mortar, or should it be left out of consideration?

ANALYSIS OF MORTAR TESTS.

Test No.	No. of Samples	Proportions: A: Cement	A: White Lime	A: Gray Lime	B: Red Soorkhee	B: Burnt Gault	B: Stock Brick	B: Sand	Proportion A : B	Average Strength in lb. per sq. inch at 6 months
VII ...	8	1	1	—	1	—	—	6	2 : 7	645
VIII...	8	1	—	1	1	—	—	6	2 : 7	488
X ...	8	1	1	—	—	1	—	6	2 : 7	809
XI ...	8	1	1	—	—	—	1	6	2 : 7	663
XII ...	5	—	2	—	2	—	—	6	1 : 4	225
IX ...	4	1	—	—	—	—	—	3	1 : 3	3,051

REMARKS ON CONCRETE TESTS.

Unfortunately, there was no time to make tests of lime, sand, and soorkhee concrete. The mixture employed would have been 1 lime, 1 soorkhee, 1 sand, and probably 6 of shingle, and the results the writer would have anticipated should have been about 300 to 500 lb. to the square inch, after six months. Combining the mean of these, say 400 lb., and the average result of No. V, we get a new average of about 2,000 lb. to the square inch, which agrees pretty well with the average result of the two tests Nos. I and II. If carefully carried out, these results would undeniably encourage the employment of cement to improve lime concrete at comparatively small cost. Cement has been so employed in India since Portland cement was first manufactured.

REMARKS ON MORTAR TESTS.

It will be noticed that the cement and sand test beats all other tests hollow. The writer does not, however, consider that the question has been settled by these experiments. In the first place the red soorkhee, burnt gault, and stock brick, supplied, were all well burnt, and Indian traditional practice demands a certain proportion of half-burnt material. As a matter of fact, the purer the lime the more under-burnt the proportion of soorkhee necessary to make it set under water. With the well-burnt material supplied, the white lime had insufficient inducement to set under water, and the writer is a little surprised it did so well. Cement seems, besides, to have a kind of chemical (?) affinity for lime, and helps it to set. The writer has used cement, lime, and sand without soorkhee in work set in air, but has always used soorkhee in underwater and underground work, because he could not make the necessary experiments to decide whether it could safely be left out.

THE QUESTION OF COST

is, of course, an important one. The cost of labour in mixing, handling, and applying such mixtures, would, with a little experience, be probably the same. If the slower setting does not affect the cost, or other considerations, it is no disadvantage. Mixing lime with cement gives a fatter mortar, easier to work. In a country where cement is nearly as cheap as lime there seems to be no object in using a mixture, unless it is to get a fatter and possibly more watertight mortar. Where lime is cheaper than cement, it is obvious that in the course of time a mixture of, say, 1 cement, 1 lime, 1 soorkhee, and 6 sand, may be better and more reliable than 1 cement to 4 sand. In the former case we get 2 of cementing material to 7 of other material, that is, 1 : 3½; in the latter case 1 : 4. The soorkhee, too, being as finely ground as the cement and lime aids to fill the interstices of the sand. Clay is recommended for adding to the water-tightness of cement concrete. It is a question whether soorkhee would not be better.

In the East, where carriage is very heavy, where lime is cheap and good, and the native masons understand its use better than the use of cement, such mixtures have a very high value. In Rangoon, a large seaport, the cost of cement to lime in 1909 (see *ante*) was as 20 : 3. In the Shan States, or similar localities in Burma, where the cement had to be carried many miles by pack-animal or man-carriage, the differences were enormous, probably as 20 : 1 to 100 : 1, in the same year. In January 1909 *Indian Engineering* gave the price of lime in Dehra Doon in Northern India, at site of kiln, as Rs. 60 per 100 maunds. A maund is, roughly, 80 lb., and a rupee 1*s.* 4*d.*, so that the rate works out to 1*s.* per 100 lb., about £1 2*s.* 6*d.* per ton of 2,240 lb.

These conditions prevail everywhere in rough, undeveloped lands, and it is of the highest importance to the structural engineer and to capital that cement can be utilised as described in this article. In the absence of reliable tests we are all working in the dark, by rule of thumb.

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LIGHTNING RODS.

THEIR CORROSION AND MICROSCOPICAL DEFECTS.—I.

Written and Illustrated by James Scott.

IT seems to me that too little attention has been given to the gradual destruction, or at any rate, the deterioration of lightning conductors. I have, therefore, gone deeply into this important subject, and have made direct microscopical observations so as to be in a position to explain the factors responsible for the mischief, and to illustrate the chemical procedure involved in the various grades of corrosion.

Besides repeatedly examining the different metals used, I have followed out control experiments, which have confirmed the principal points of the observations made. Results must vary slightly, according to the environments and climatic conditions in which the respective metals are placed. Comparatively clean, and dry, atmospheres would, of course, fail to yield the same products possible in damp and dirty situations.

The illustrations, however, may be regarded as typical of the routines through which the rods pass, unless they are exceptionally good, continually inspected, and renovated as needed. Curiously enough, people who stand to lose the most by the destruction seem to neglect these things; yet such a course is easily avoided by a little forethought and endeavour.

The study of lightning conductors concerns the architect, the builder, the electrician, the engineer, and the metallurgist, besides the actual owner of the property which is presumably protected by the objects. If these various classes of men were to co-operate more freely than they do at present, a great amount of benefit would accrue from their mutual deliberations. As matters stand, the subject is divided up to extents which just concern each respective section, and incidental phases are usually ignored. This is a great pity.

Some conductors are of iron only, the best diameter for which is anything reasonable above ½-inch diameter, which size, however, seems to be preferable for copper, especially when square in section. No settlement has been arrived at in respect to the metal, or combination of metals, likely to be most serviceable. Some experts favour specially coated iron; others select copper; while a few believe that stout iron wires, sheathed by copper, possess the greatest merits. These are matters that cannot now be discussed.

We will suppose that a lightning conductor is overhauled, and is found to be so badly corroded that its removal is advised. If any of its structure consists of copper, this may be found to be covered, partly or wholly, by a bluish or purplish crust, which mere grime has considerably darkened. In the event of the rod being iron, or having any of that metal in its composition, the damaged portions will appear as greenish, or reddish, pimply and flaky *débris*. These things, occurring in apparently disorganised masses, usually fail to attract the close examination necessary in order that the precise manner of their formation can be understood; and the wrong conclusion is arrived at that there is nothing about them worth notice. But the microscope proves otherwise, as I will endeavour to explain. Minute features of very regular shapes occur during the deterioration; but these, by haphazard, irregular amalgamation, conceal their original configurations.

It should be remembered that the continuation of the decay would simply be due to a series of repetitions of these small effects. As the corrosion proceeded, the contrasts noticeable in connection with new materials might not be so strikingly pronounced; but they would occur just the same. Injured metal would be either blown away in the form of dust, or be carried off in solution or suspension where possible. In cases that did not allow of its removal—such as the choked interiors of hollow copper sheaths—its collection into masses would help to cause rupturing, or warping, of surrounding parts.

It needs emphasising that the sharp distinctions made between the results of experimental chemistry cannot be traced out in natural phenomena. We speak of sulphates, sulphites, and sulphides (and the "di" and "dis" ditto); but in continuously watching the changes which occur in lightning conductors it becomes clear that there are intermediate gradations to which no name nor formula can be applied. Results which are never mentioned in text books greet the eyes; and must be regarded as connecting links, rather than definite conditions; although, in their way, they are as conspicuous as the others of familiar classification. This phase of the subject should never be lost sight of, because it is one of great importance.

Seeing that the electrical current which travels up or down a conductor passes along the surface only, and does not penetrate into the internal mass, it is difficult to discover to what extent it affects the deterioration. Probably the current is too active to have any action whatever on the metal while it is quite intact and proper; but it would be likely to further destroy it when the rod had been contaminated in the way suggested. Chemical operations would suffice to deleteriously modify the metals; and the purely mechanical action of shocks due to vibrations and wind, and the dislocations due to rain, would be enough to carry off pulverised scraps occasioned by the first-named processes.

Electrolysis does not, I believe, play any notable part in the destruction of the metals. Still, there may be some stimulation due to this process capable of causing the detachment of particles, and thereby allowing atmospheric conditions to exert themselves to fuller extents than they would otherwise do.

As will be understood by the statements elsewhere made, the climatical modification of the metals produces various minor crystalline salts, and these may be open to operation by electrical excitation, becoming, in consequence, less securely adherent to the parent rod, and thereby weakening the metals to an indeterminate degree. However, these problems need to be actually and repeatedly tested before any satisfactory conclusions can be set forth.

It is utterly impossible to say what happens to the metals during the time that the oscillations—about a million per second—of a flash travel along a conductor. The current is probably too busy to do much besides looking after itself, as it were.

The heat resulting from an electric discharge may considerably help the chemical processes; but this can hardly be called an electrical action. The heat of the sun must be looked upon as likely to produce similar changes—or, rather, to accelerate the speed of those changes.

Galvanised iron seems hardly suitable for use in connection with lightning conductors, especially if copper happens to be present. Some amount of disintegration would naturally be expected. Zinc, which forms the coating of galvanised metal, appears to attract heat, and to hold it quite a long time. Continuous sunshine might, therefore, tend to blister it, and thus pave the way to a peeling of the surface. Exposure of the iron would then result, to the detriment of the whole conductor.

Moisture readily manages to find its way into the core of a copper-sheathed rod, and can thus operate on the interior metal just the same as if it were exposed to the air. The slightest crevice will admit vapour and fumes, and these condense and evaporate repeatedly or alternately without hindrance. Abundant moisture would also rise from earth connections, especially from wet soil, in which it is widely considered preferable to place them.

The principal gases or vapours which would be capable of attacking lightning conductors are those of a sulphurous character. They emanate from smoky fumes, such as those yielded by coal and kindred carbonaceous fuels. Even in country districts enough of the fumes are blown from the towns and cities to assist those coming from trains in the evolution of sulphurous anhydride, which is the name for the gas of burning sulphur. Organic matters of all kinds, under the oxidising influence of the air—especially in hot weather—occasion sulphurous gases. Sulphuretted hydrogen may be the first product of decay, but the sulphurous factor is soon detached and ready for action.

Sulphurous anhydride (into which most sulphurous compounds of a gaseous kind are modified) combines with the infinitesimally minute globules of mists, fogs, clouds, and so on, to compose sulphurous acid, and it is this powerful fluid which so strongly attacks lightning conductors.

II.

IN the first chapter it was pointed out that sulphurous fumes emanating from decaying organic matters, or from smoke, are resolved into sulphurous anhydride—the gas typified by the smell of burning sulphur—and that this is absorbed by the minute globules of moisture suspended in the air in the form of clouds, fogs, and mists. The combination of gas and water constitutes sulphurous acid, which may become oxidised to sulphuric acid. Water globules that are

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already in position may attract the sulphurous anhydride as readily as those rising, descending, or floating in various directions in open space.

I found, by direct experiment and observation, that if any of these metals are surrounded by a damp atmosphere, and sulphurous anhydride (the gas) is in the vicinity, minute globules of moisture first condense on the surfaces, and into these the gas afterwards penetrates.

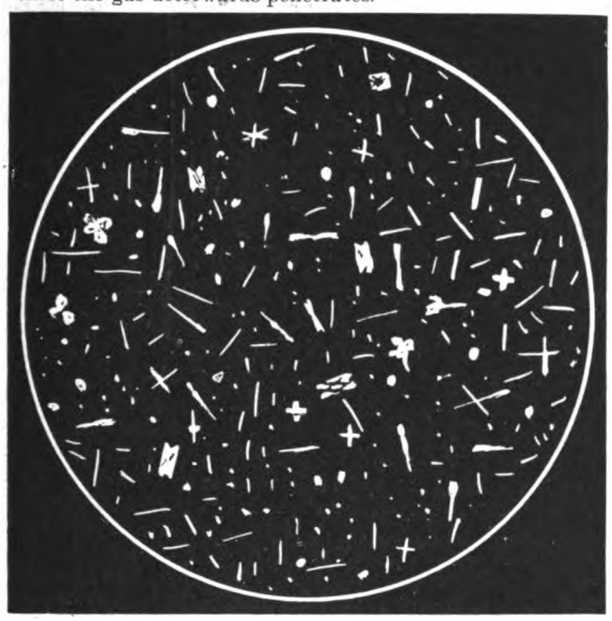


FIG. 1.—The circle is a space $\frac{1}{24}$-inch in diameter, and shows crystals left behind after a drop of sulphurous acid has been evaporated.

In the event of sulphurous acid coming into contact with the lightning rods it soon sets up a series of chemical reactions on the metals, the style of which varies according to the nature of the substance attacked.

The gases would be incapable of doing much harm in the entire absence of moisture. The fact that the latter may not be visible does not prove that it is non-existent, since it may be present in myriads of tiny globules already settled in position, and proceeding with their disastrous work.

Although, nominally, sulphurous acid is a fluid only, it will yield upon evaporation minute crystals of the kind shown in fig. 1. Sometimes other figures may be found, such as oblongs with V-chipped ends, crosses, rhombs, &c.

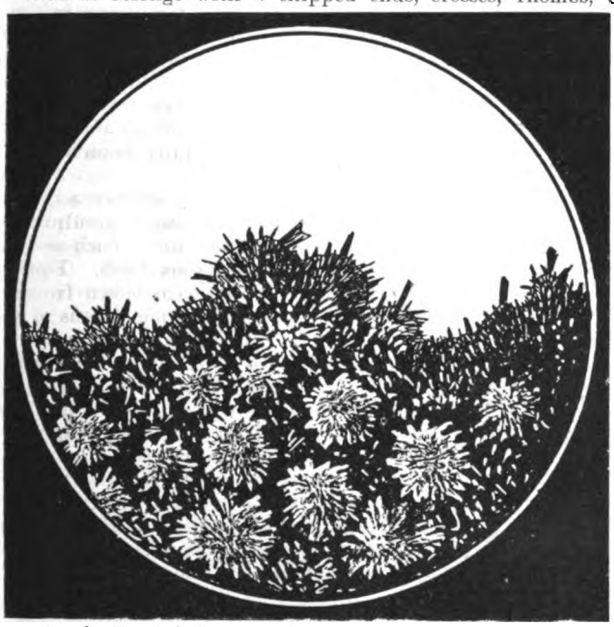


FIG. 2.—The circle is a space $\frac{1}{24}$-inch in diameter, greatly magnified, and shows how sulphurous acid (derived from sulphurous fumes and moisture) affects zinc surfaces of rods.

It is not worth discussing the exact chemical composition of these crystals for the reasons stated elsewhere—namely, that in nature indefinite gradations are discoverable.

Sulphurous acid parts somewhat easily with its stinking gas when exposed to the air; but if any metals are available it freely attacks them, forming sulphites by the union, and sulphates if free oxygen is in subsequent excess. It should be noted that alternating modifications would probably be rapid, the gas combining with water, and then being freed, only to be taken up by fresh globules, thus constituting a regular course of events.

The action of sulphurous acid on the zinc coating of galvanised iron rods is as follows:—No globules appear, but the lustre of the metal is gradually lost, and is superseded first by a grey dullness and then by a white powdery appearance. The surface presents a finely granulated condition, and when this is magnified it appears as shown in fig. 2, consisting of irregularly placed groups or mounds of minute spicules, mostly insoluble in water.

Upon knocking some of this powder off into a drop of water on a glass slide most of it eventually distributes itself in the form of very minute dots; some of it, however, drying into small shapely crystals of zinc sulphate. Evidently this metal wears down wonderfully quickly in sulphurous atmospheres.

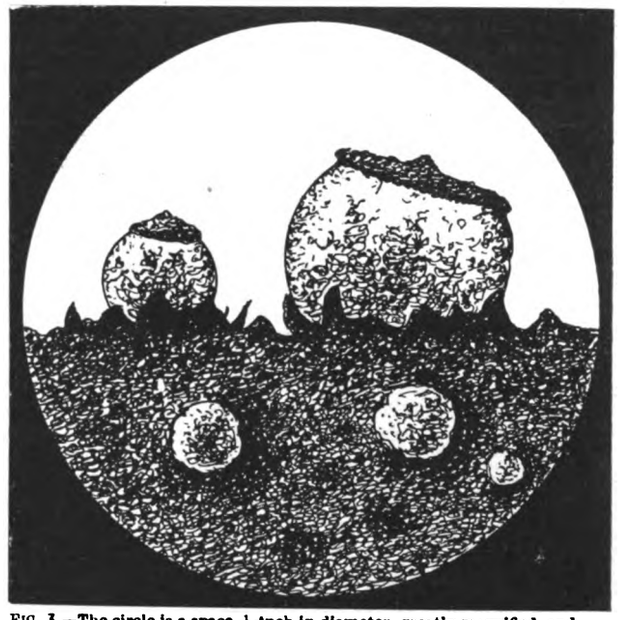


FIG. 3.—The circle is a space $\frac{1}{24}$-inch in diameter, greatly magnified, and shows how sulphurous fumes condense and act upon iron rods.

In the case of iron, sulphurous acid appears in the form of very small erections or papillæ, and the metal assumes a reddish hue. The procedure is depicted in fig. 3. At first, as a rule, a series of scattered transparent moisture globules are discernible. Within these there gradually appear speck-like particles which group themselves into all manner of designs—fern-like, bush-like, and lace-like—their

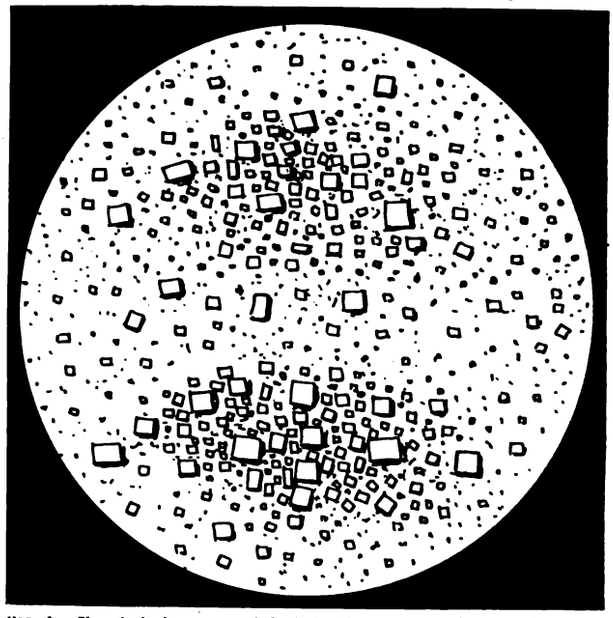


FIG. 4.—The circle is a space $\frac{1}{24}$ inch in diameter, greatly magnified, and shows transparent crystals obtained from within one of the globules (see fig. 3) from an iron rod.

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number increasing so rapidly that the globule gets entirely full of them, and is converted into a solid ball of rust when the watery portion evaporates away.

Occasionally the globules will suck up and distribute the modified metal principally on its outside, and after evaporation has ensued a thin shell remains. This fragile object may get split up, owing to dislodgment of some of itself, into spiny projections or valvular flakes.

Another kind of formation is that in which the globule begins its career partly submerged in the metal. Its sinking action is no doubt due to the fact that it is more acid in character than the other globules. Its water may evaporate and leave a mere dome of metal behind; or it may enlarge and carry a fleck of the shell upwards on its surface as a sort of lid. When evaporation occurs the detached portion of metal is blown or jerked right away, and is, of course, a dead loss to the rod.

These appearances result within a few hours of the exposure of the bare iron surface to the action of sulphurous fumes. Of course, the procedure is more noticeable on new surfaces than on old ones; but the same series of modifications must go on, however long the attacked conductor is in position. To the naked eye, however, the corroded surfaces seem to present nothing more than shapeless crusts.

Some pieces of these globular formations fall together into heaps; others are removed by wind, water, or vibrations, and so the iron looks as though only haphazard disintegration is taking place in them; but the fact is that minute globules are doing just the same, day after day, for years at a stretch, eating spherically below the first comers and swelling the general mass of refuse. It will be seen, therefore, that these disfiguring features are well organised. There are two kinds of iron salts—the ferrous and the ferric. The first-named are green and the second reddish. Yellow and brown tints may be traced in the latter group. The green salts oxidise to the red. It would appear from this trait that air oxygen and so much of the water as remains after the sulphurous ingredient has left the sulphurous acid help to cause the development of the red colour. As I have

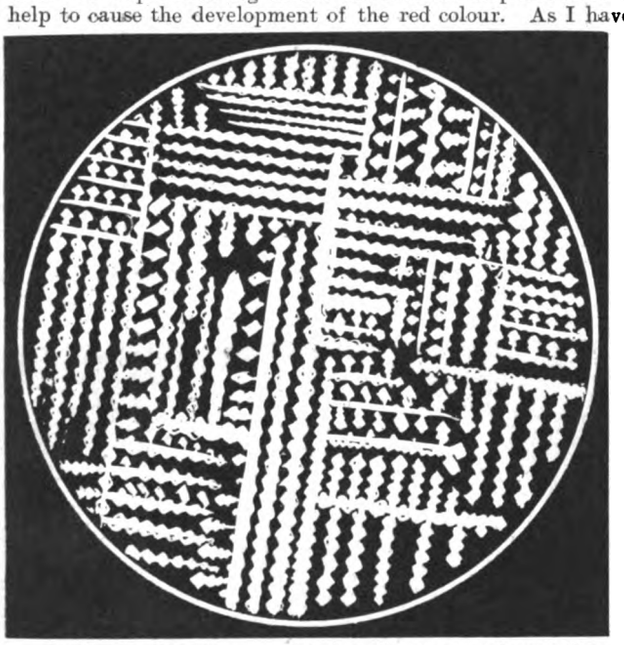


FIG. 5.—The circle is a space $\frac{1}{24}$-inch in diameter, greatly magnified, and shows an arrangement of crystals (each similar to those of fig. 4) obtained by allowing a scrap of iron to lie in sulphurous acid.

elsewhere pointed out, greenish effects are traceable, but no hard and fast distinctions can be made.

It should be understood that all references to iron cover steel as well, for both are equally amenable to these influences.

I lifted some of the shelly globules off the metal and transferred them to a glass slide, upon which they were broken up. The solution inside them crystallised within a few minutes into clusters of minute hyaline, colourless, squares and oblongs (tending to form cubes), as shown in fig. 4.

It is a striking fact that similar squares and oblongs, mostly dark and solid, were obtained by allowing a piece of clean iron rod to lie for a few hours in a drop of sulphurous acid. After evaporation had occurred the yellowish, greenish, and reddish patchy crust which had been evolved disclosed upon magnification angularly arranged rows of the kind already referred to. It was evident that these were made up of square and oblong crystals of very minute, yet various, sizes set corner to corner in an overlapping manner. These are shown in fig. 5.



FIG. 6.—The circle is a space $\frac{1}{24}$-inch in diameter, greatly magnified, and shows crystals (blue) resulting from the action of sulphurous fumes in a moist atmosphere acting on a copper rod.

The copper of lightning conductors is attacked by sulphurous fumes with the initial appearance of small globules containing the gas, these having been condensed on to the surface as scattered specks. When they evaporate they leave distinct geometrical blue crystals behind. I do not find that any hollow shells occur as in the case of iron. The action always causes a deposition of crystals of the kind depicted in fig. 6.

These objects, which may range from very small to large dimensions (comparatively speaking) may get redissolved, and in this way be spread more evenly over the surface when evaporation again occurs. On some occasions the salt would be washed entirely away, the surface remaining fairly smooth and apparently not much corroded. In this way it is easy to understand how observers would be misled to the belief that copper withstands sulphurous fumes better than iron.

A few words may be said concerning the rods themselves. The durability of the respective metals is a feature that needs great consideration. It is presumed that for cities and towns iron rods are less suitable than copper ones, but the matter can hardly be said to have been settled. The value of a rod may be said to depend more on its lasting powers as a metal than on its response to slow and rapid currents.

Iron has much greater resistance than copper against the steady flow of electricity, but the self-induction noticeable in the case of iron is far less than that of copper in cases where flashes of lightning are concerned. Copper rods are therefore preferable for countries in which steady flows are commoner than sudden strokes, which they tend to prevent.

It has been proved that an electrical discharge is carried off much better by means of an iron conductor than by one of the same size made of copper.

Based on the idea that rods of any metal are equally as good as one another provided they are maintained in a clean, efficient condition, some tests have been made with aluminium. This has been proved, however, to be only half as effective as copper of the same diameter; but if the cross section of the aluminium is double as large as the copper, then the value of both for use as lightning conductors will be about the same.

THE LATE MR. J. ARTHUR REEVE.

BRITISH architecture has lost an accomplished exponent in Mr. J. Arthur Reeve, who has died at his residence, Yarrow Bank, Kingswear, Devon. Born in 1850, Mr. Reeve received his training under the well-known architect, the late Mr. W. Burges, and from the first gave promise of unusual artistic ability. He was essentially an ecclesi-

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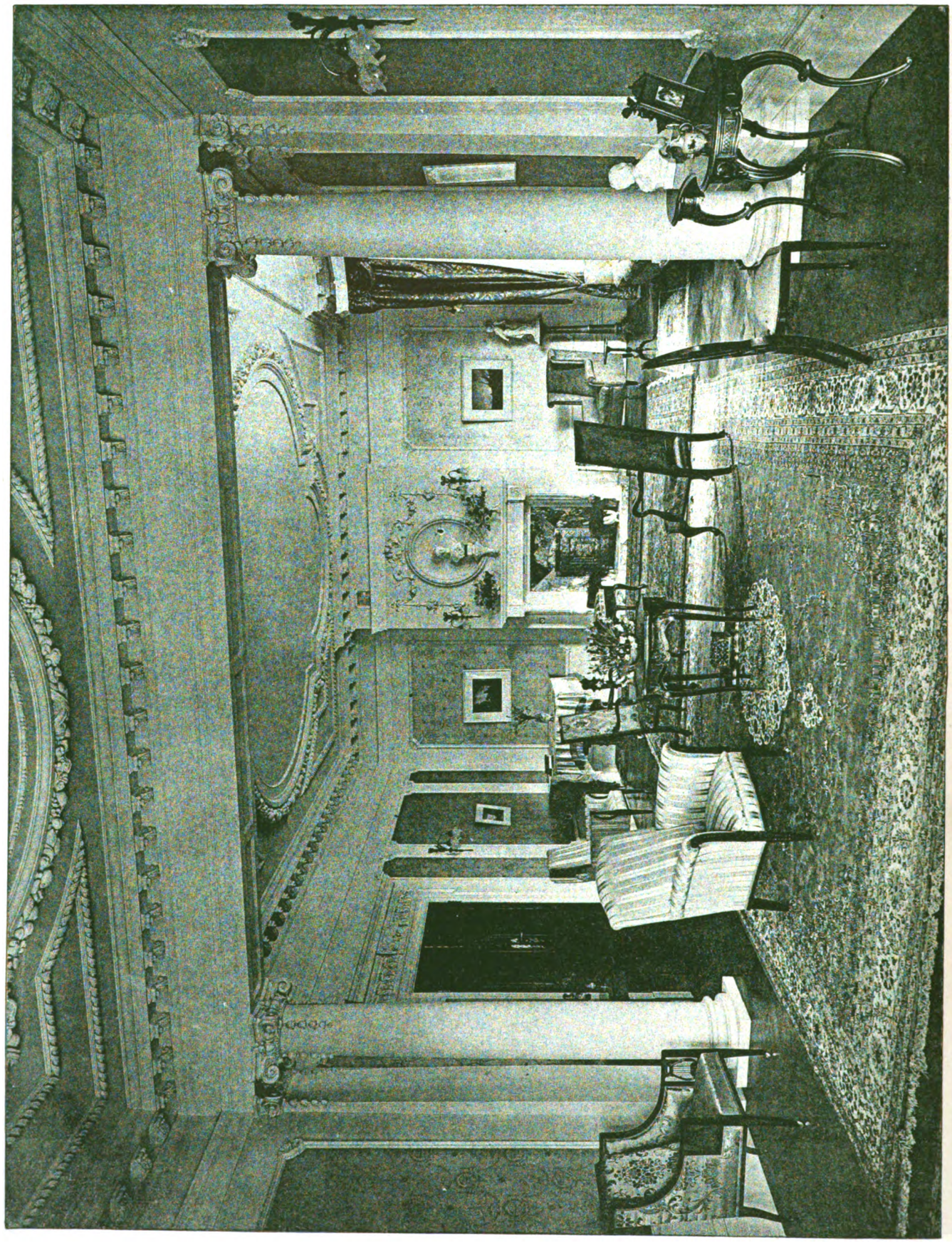
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KEMNAL MANOR, CHISLEHURST.— THE STAIRCASE.

Mr. VICTOR WILKINS, Architect.

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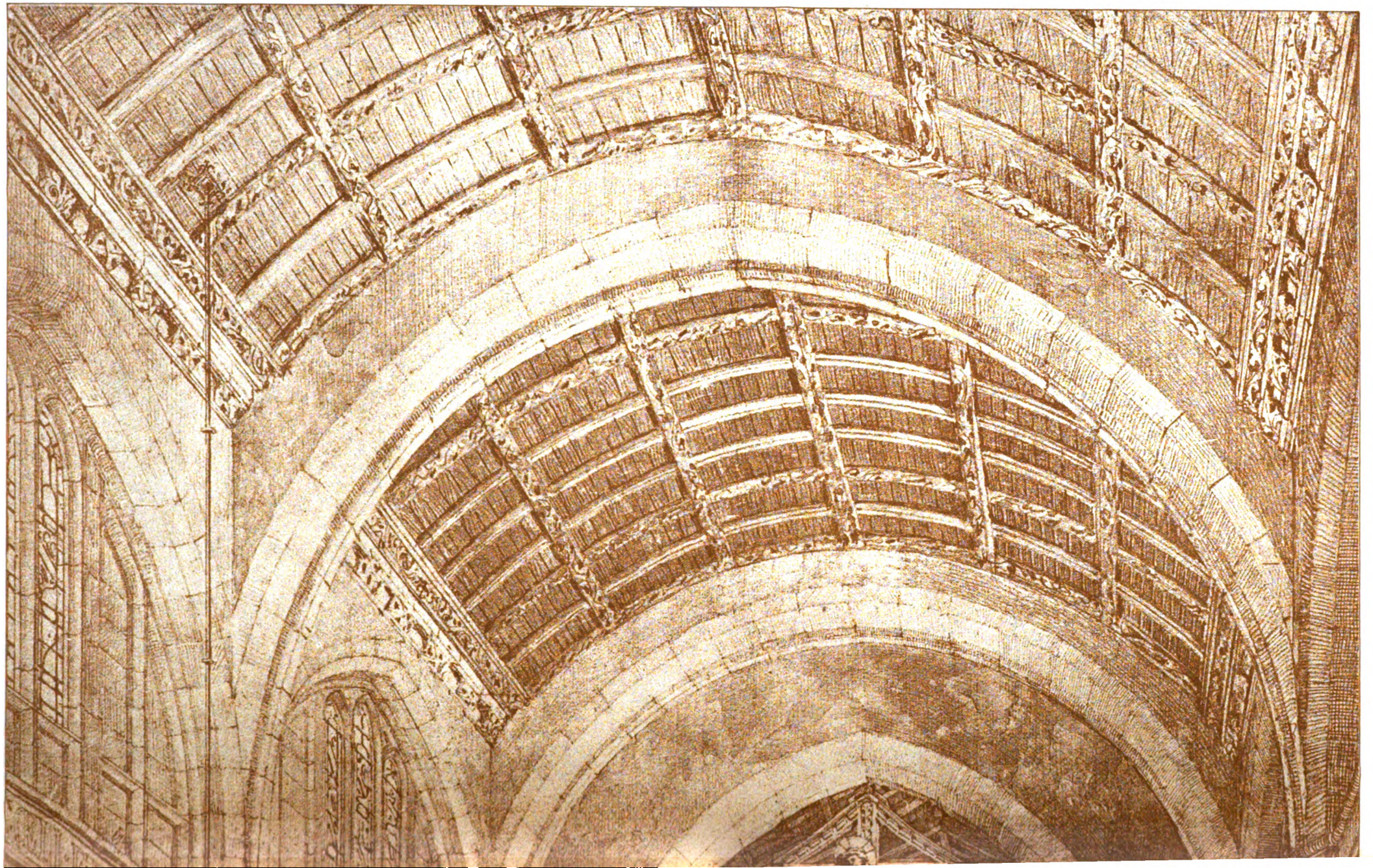


KEMNAL MANOR, CHISLEHURST.—THE DRAWING ROOM.
MR. VICTOR WILKINS, Architect.

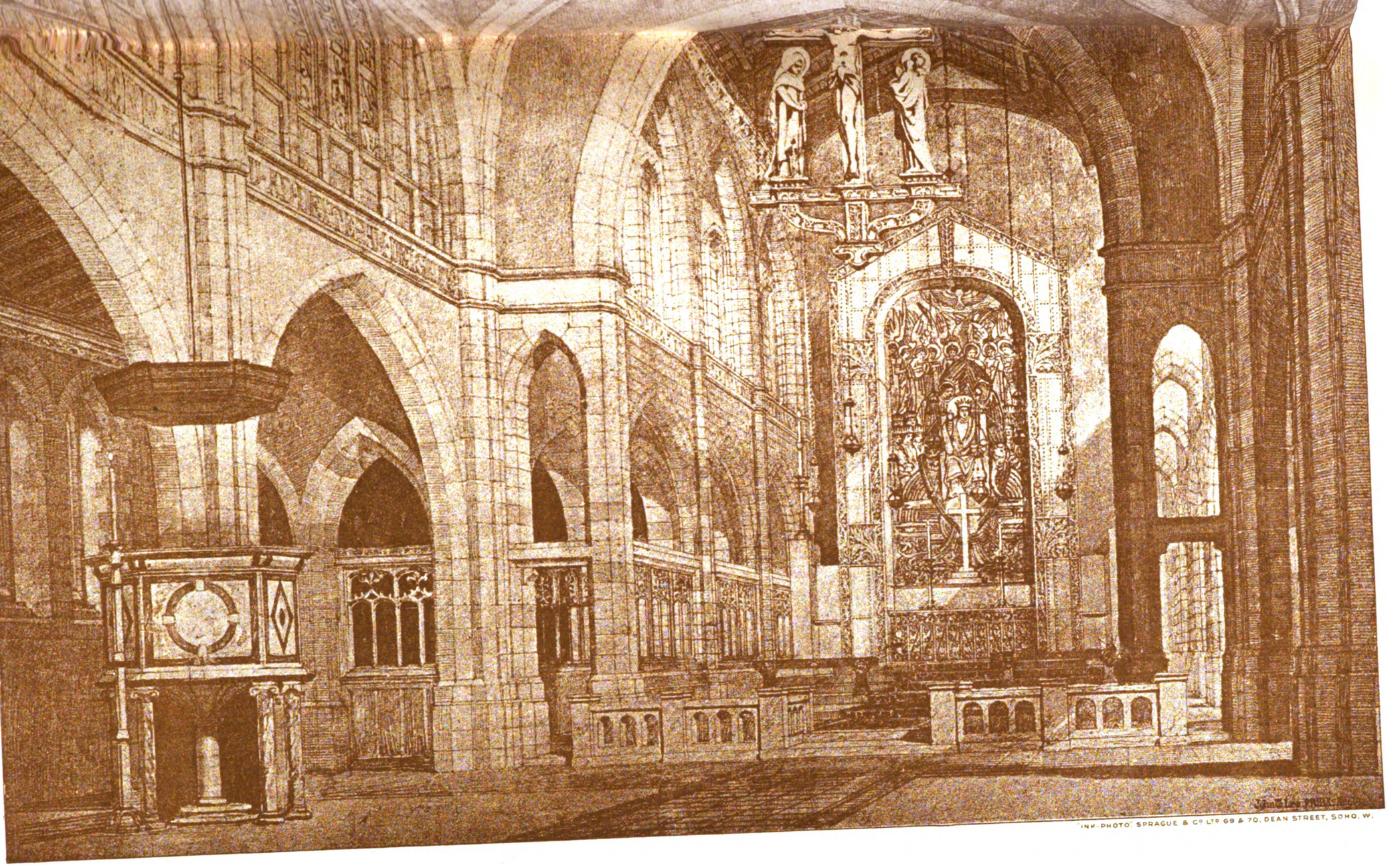
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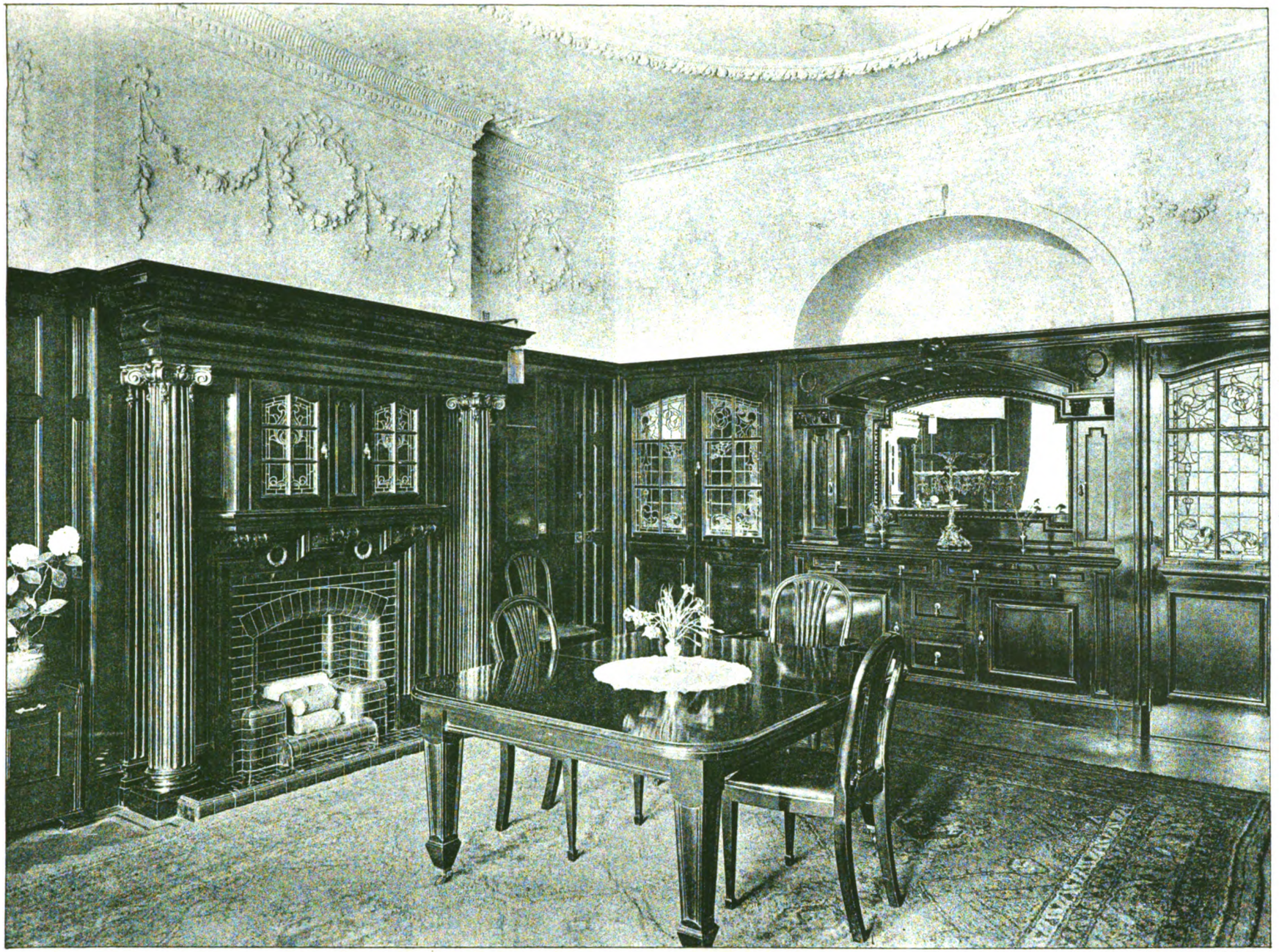
ST. MARGARET'S CHURCH, EASTNEY.

Mr. JOHN T. LEE, Architect.

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KEMNAL MANOR, CHISLEHURST.—THE DINING ROOM.

MR. VICTOR WILKINS, Architect

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KEMNAL MANOR, CHISLEHURST.—THE HALL FIREPLACE.

Mr. VICTOR WILKINS, Architect.

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astical architect, and one of his finest works is St. Mark's Church, Salisbury, which is now approaching completion, and is to be dedicated in the coming autumn.

Among the many notable works of restoration carried out by Mr. Reeve, who uniformly strove to preserve every memorial of artistic and historic interest, were Ramsbury, formerly the cathedral church of the diocese of Sarum, Luton in Bedfordshire, East Dereham, Welborne, and Redenhall in Norfolk, and Cliffe and Chilham churches in Kent. He designed and built the Missionary College of St. Boniface, Warminster, the Pepys Memorial House, Westminster, and Archbishop Temple's Boys' School and Master's House, Lambeth. The memorial to the five Archbishops of Canterbury (Manners, Sutton, Howley, Sumner, Longley, and Tait) buried in Addington Churchyard; the remarkable memorial to all those buried in the churchyard of Hayes, Kent; and a tomb of exceptional artistic merit in its design, to Baron Hambro, in Milton Abbey, Dorset, are particularly good examples of his works of this kind. He also carried out the fine screen and altar forming the Pelham Memorial Chapel in Lambeth Church, and in the same church the unusual, if not unique, "font grave" for total immersions at baptism, in memory of Archbishop Benson.

Mr. Reeve's decoration of St. John's, Hoxton; his beautiful frescoes in St. Andrew's, Ashley Gardens; the mosaics and decoration in the Lady chapel of St. Stephen's, Westminster; and the exceedingly effective chancel and reredos in St. Barnabas, Addison Road, are the chief evidences in London of his artistic mastery in decorative works. In the Thring Memorial Cross at Uppingham his work is associated with the name of one of the great pioneers of modern educational progress. In everything he undertook Mr. Reeve was, above all things, the conscientious and disinterested artist. In the comparatively early years of his career he was offered and refused a post which is considered one of the chief prizes of his profession, because he felt that it would not give him the time always to do the best work himself.

ARCHITECTURAL BRASSWORK.



MUCH thought is bestowed by manufacturers on the important questions of how to save time spent on the production of their wares, and in so planning their workshops that the maximum of output may be secured in the minimum of space, both being economic factors of the utmost importance.

But it has remained for Messrs. Evered & Co., Ltd., of Drury Lane, W.C., to deal successfully with a problem quite as important to the busy architect—how to economise his time and effort when inspecting the finished articles.

To accomplish this, much care must have been given to the subject, the outcome being evidenced by an exhibition of a very complete series of architectural brasswork, displayed in an ordered method, in a compact space, and under the best conditions for due examination and appreciation.

So much being contained in three cabinets only, the labour of inspection is reduced to a mimimum, and comparison of style, finish, and cost greatly facilitated.

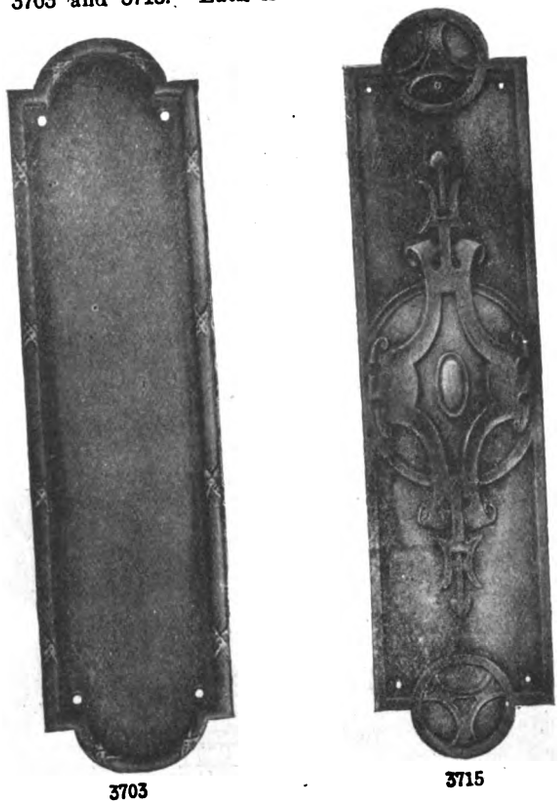
But there is no crowding together, or clashing, in this display, owing to the special design of the cabinets. They are constructed of oak, having sliding glass fronts, the interiors fitted with revolving panels hung from the centre and lighted from above.

On either side of each panel is shown a different section, ranging from casement fasteners to elaborate lock plates and furniture of Jacobean and Empire periods. Each article is plainly marked with a reference number. In front of each panel is to be found a table giving the prices of every article exhibited, and also for any desired variation in finish—the tables are contained in metal frames designed for convenient holding.

Shown under such excellent conditions the goods are seen to the best advantage, but receive no adventitious aid, for in design, workmanship, and finish they reach a very high standard.

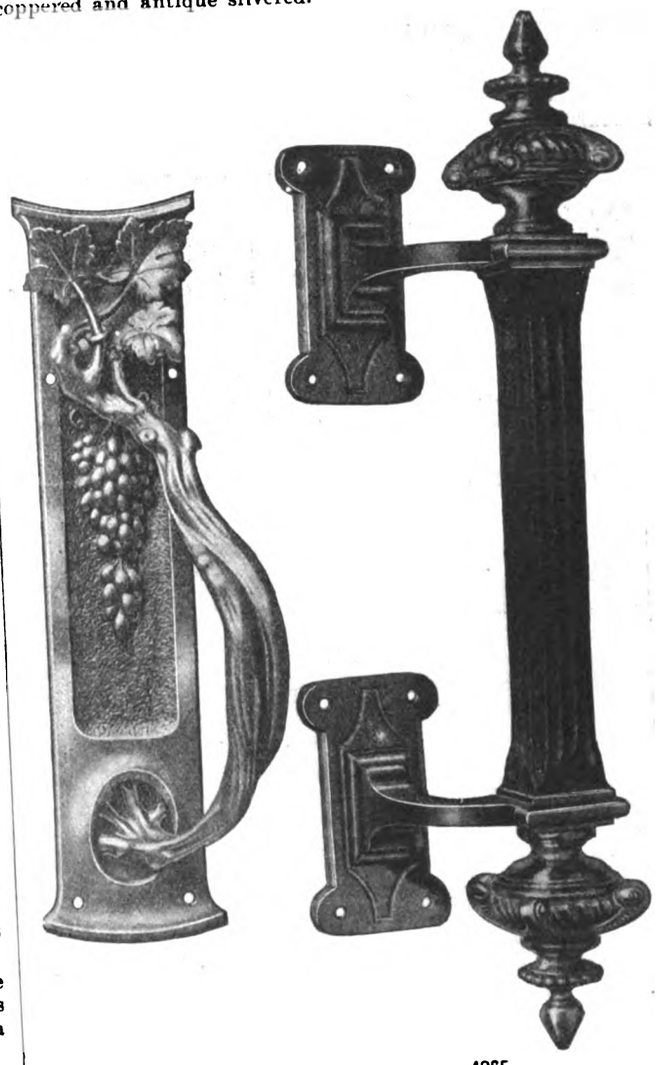
Where all are good and each fulfils the purpose for which it was designed, the selection of a few as illustrations is rendered difficult.

As a contrast in design of finger-plates we give Nos. 3703 and 3715. Each is fine cast and hand-chased,



3703 3715

and is shown in antique brass and satin finish, antique coppered and antique silvered.



6309 4265

No. 6309 is a polished brass door handle, also shown in

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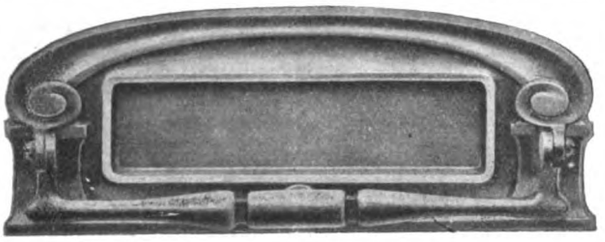
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coinage bronze finish, and No. 4265 is in French grey silver with ebony grip.

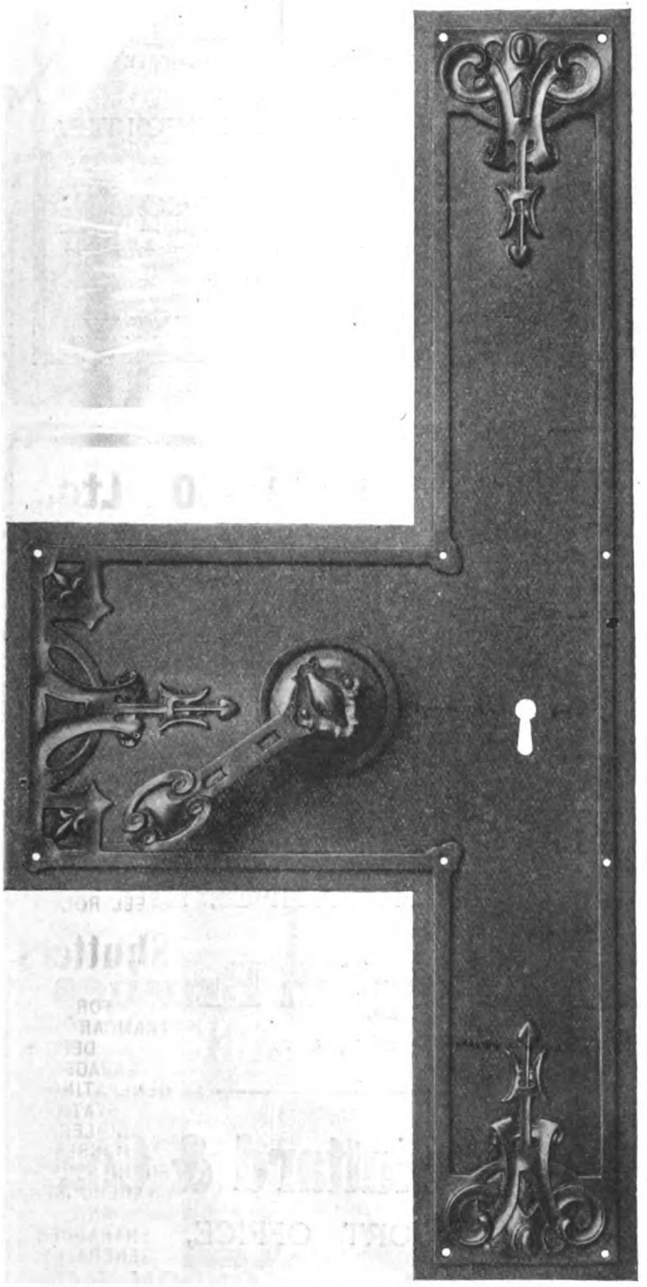
Brass polished pull handles for swinging doors form one of the sections, and are in numerous designs, one of the most effective being No. 4218. The entrance doors to Messrs. Evered's showrooms are fitted with this pattern, with kicking-plates to harmonise.

In smaller articles, such as brass letter-box plates and knockers, cupboard and drawer pull handles, drop handles,



3750

electric-bell pushes, &c., the same care in production is shown, but the limits of our space prohibit us from more than calling attention to them.



3E04.

From the section devoted to lock plates and furniture in periods styles we illustrate No. 3804, and with that must leave many other attractive features unnoticed. Sufficient has been shown to prove that Messrs. Evered & Co., Ltd., have an exhibition that will repay inspection, and that it can be seen without making too great a call upon the visitor's time.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Labour Troubles.

SIR,—Your Bournemouth correspondent's desire for the intervention of Government in these matters, with force to compel men to do this or that, is too Hunnish a scheme for this age. Might we not try to look much deeper for the causes of these effects called labour troubles?

Labour, alas! but imitates its betters (so called) when seeking to grasp all they can get, with this much to be said in part extenuation thereof, viz. Necessity.

The human factor appears to be left entirely out of count in the soulless supply and demand system between the only two real classes in a civilised community, so that instead of looking to a much overrated Government for help in the matter, might we not as individual, merchants, professionals, craftsmen, labourers, or what not, look within ourselves, and honestly ask if anything else but trouble can possibly be expected from labour under a system of catch-as-catch-can and the "devil take the last man," which has for a few generations made this and other commercial countries a happy hunting ground for profits at any cost, regardless of the woeful effects of this sadly inefficient way of building up men and workers of character, whose ideals are largely fashioned by examples from the upper ranks?

The homely old standards of honest dealing, justice to all, small and great, truth and temperate action in our intercourse with each other, is more likely to bring about a readjustment of the present chaotic system of rapaciousness all round, than a transfer of the Germanic force principle to the field of labour, and true it ever is that we get exactly "the measure we meet," so that in character building, not force, is the only remedy for the attainment of a finer manhood in the nation, inspired by higher ethics than those generally apparent in the sordidness of the struggle for gain and so-called success in life. The gallant men whose blood is staining the earth and seas, in order that we may go one better than our neighbour, is a reproach to all who can only see life through a mist generated by their own covetousness.—Yours, &c.,

C. T. FREEMAN.

9 Molyneaux Street, W.: May 21, 1915.

Belgian Architectural Records.

SIR,—At the present time, when public attention is so much directed to the destruction of historic buildings in Belgium, I wish to bring before your readers the fact that a committee has been appointed by the Council of the Royal Institute of British Architects to form a collection of records of these. The Council is of opinion that this collection must include all buildings of historic interest in Belgium, in view of the uncertain course of future events.

I now appeal to all those who possess photographs, measured drawings, sketches, old prints, plans of towns, and illustrated guide-books to individual towns to present these to the R.I.B.A., where they will be embodied in a branch of the library, with a special catalogue for reference. The collection, when completed, will be accessible at the same hours and under the same conditions as the rest of the library. It is hardly necessary to add that Belgian architects will be particularly welcome to the use of the collection.

The Council is especially anxious to obtain gifts of photographs taken by visitors to the smaller towns of Belgium, such as, by way of example, Nieuport and Furnes, where there are often churches and houses of great architectural interest which are not illustrated in standard books on the architecture of Belgium.

The Council feels that such a collection brought together in one institution would be of permanent value to all interested in the art of Belgium.

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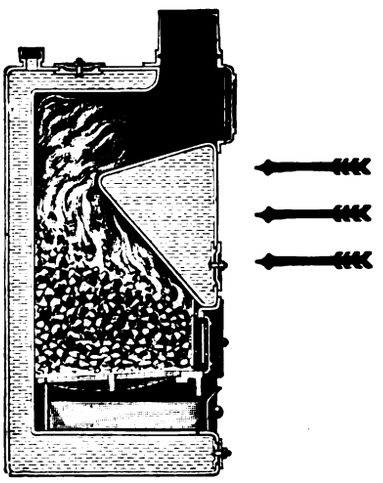
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All gifts should be addressed to Mr. Martin Briggs, A.R.I.B.A., Hon. Secretary of the Belgian Architectural Records Sub-Committee, at the Royal Institute of British Architects, 9 Conduit Street, W., by whom they will be acknowledged.—Yours, &c., ERNEST NEWTON, President R.I.B.A.

9 Conduit Street, W.: May 27, 1915.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BERKSHIRE.

Reading.—Hospital: pavilion. Messrs. C. Smith & Son, F.R.I.B.A., architects, 164 Friar Street.

CORNWALL.

Launceston.—Proposed isolation hospital.

Mabe.—Wesleyan Chapel.

Truro.—Business premises, Princes Street: additions and alterations for Messrs. Hosken, Trevithick, Polkinhorn & Co., Ltd. Mr. A. J. Cornelius, architect, 81 Lemon Street; also

No. 28 Ferris Town: additions, &c.

DERBYSHIRE.

Buxton.—Church, Dale Road.

Chesterfield.—Thirty-eight working-class houses, St. Augustine Road. Assistant Borough engineer (£6,840).

Derby.—Warehouse. Mr. H. H. Pitt, architect, Beacon Villas, Low Fell.

DEVON.

Plymouth.—Hospital, Mount Gold: extension.

Totnes.—Parish church: proposed restoration of the tower. Mr. C. R. B. King, A.R.I.B.A., architect, 2 Dean's Yard, Westminster, London.

DURHAM.

Easington Colliery.—P.M. church.

Ushaw Moor.—House and shop, for Mr. D. T. Todd.

GLOUCESTERSHIRE.

Bristol.—University: tower and main buildings. Messrs. H. Willcock & Co., contractors, Darlington Street, Wolverhampton.

HAMPSHIRE.

Whitehill.—Police station.

KENT.

Bromley.—No. 28, The College, London Road: alterations. Mr. F. G. Crickett, architect.

Deal.—Victoria Hospital: proposed enlargement.

Gravesend.—Smallpox hospital, Northfleet.

Margate.—House, Beresford Gardens. Messrs. Moodey & Chrisfield, architects, Station Gates, Broadstairs.

LANCASHIRE.

Ashton-under-Lyne.—Council school, Mossley Road.

LEICESTERSHIRE.

Ashby-de-la-Zouch.—House, Burton Road. Messrs. Orton & Son, architects.

Leicester.—The "Star" Inn, Belgrave Gate: rebuilding. Mr. W. T. Grewcock, A.R.I.B.A., architect, 8 New Street. Messrs. J. Cole & Sons, contractors, Bridge Road (£1,713).

Snibstone.—Church. Messrs. Stockdale Harrison & Sons, R.I.B.A., architects, 7 St. Martin's East. Messrs. W. Moss & Sons, contractors, Belvoir Road, Coalville (£1,788).

MONMOUTHSHIRE.

Bedwas (near).—Vestry, Tre-Thomas. Mr. J. T. Jenkins, architect, Fairfield House, Porth, Rhondda.

NORTHUMBERLAND.

Bedlington.—Proposed homes, for the Northumberland Aged Miners' Homes Association.

SHROPSHIRE.

Shrewsbury.—Seventy Council houses.

Works, for Messrs. Alley & MacLellan, of Glasgow.

SOMERSET.

Burnham.—Proposed Joint Isolation Hospital for Burnham and Highbridge.

STAFFORDSHIRE.

Aldridge.—R.A.O.B. Orphanage: proposed isolation hospital (£1,300).

Stafford.—Cottage homes (£2,500), for B.G.

SURREY.

Carshalton.—House, Fairview Road: additions, for Mr. H. Rogers.

Two houses, Ruskin Road, for Mr. Tinniswood.

Croydon.—Council school, Beddington, for 150 places.

SUSSEX.

Bognor.—Two houses, Bassett Road, for Mr. W. Shaw.

Hayward's Heath.—Congregational church.

Hurstmonceux.—Castle: restoration and additions.

WARWICKSHIRE.

Coventry.—Four houses, Stoke, for Messrs. Atkins & Co.

Foleshill.—Four houses, Lythall's Lane. Mr. J. G. Gray, builder, 300 Foleshill Road, Coventry.

Six houses, Lythall's Lane, for Mr. F. W. Roulston.

YORKSHIRE.

Delph.—Gatehead House: additions. Messrs. J. Berry & Sons, architects, 3 Market Place, Huddersfield; also

Ten houses, New Road; also

Gatehead Mills: addition.

Goldthorpe.—Proposed Wesleyan Chapel.

Huddersfield.—Leeds Road Wesleyan Church: new building, corner of Canker Lane.

Middlesbrough.—Proposed 100 workmen's houses (£20,000).

Rossington.—U.M. Chapel (£2,500).

WALES.

Cardiff.—Synagogue, Cathedral Road: school. Messrs. Willmott (A.R.I.B.A.) & Smith, architects, 29 St. Mary Street.

Carmarthen.—Proposed new laundry; also alterations to "Waun Iago," for the Joint Counties Mental Hospital.

Cwmaman.—Fifty houses. Mr. A. S. Cameron, architect, 14 Victoria Square, Aberdare.

Cwmtaf.—House and farm buildings. Mr. C. M. Davies, architect, 112 High Street, Merthyr Tydfil.

Gilfach Goch.—County Council schools, Evanstown and Hendreforgan (£5,065 and £4,920 respectively). Mr. D. Pugh-Jones, County architect, County Hall, Cardiff. Messrs. Beames & Makin (of Cardiff), contractors.

Llanarmon.—House, for Mr. J. H. Warbrick.

Ogmore Vale.—Fronwen Council school: additions. Mr. D. Pugh-Jones (as above), architect. Mr. W. A. Jones, contractor, Old Post Office, Dunraven Place Bridgend (£2,976).

Pentwyn.—Cottage hospital, for the Ocean Collieries.

SCOTLAND.

Arbroath.—Shop and house, Dishlandtown Street: rebuilding, for Mr. P. Remati.

Drumshoreland (Midlothian).—Hospital: proposed advanced consumptives' pavilion (£3,000).

Dundee.—St. David's-in-the-West U.F. Church, Blackness Road and Seymour Street.

Workshop, Loons Road, for Mr. J. Galloway.

Fenwick (near).—Six houses and steadings, Wyllieland, for H.M. Board of Agriculture for Scotland.

Hamilton.—Clyde Steel Works: extensions, for Messrs. A. Baird & Son, Ltd. (£10,000).

Paisley.—No. 92 High Street; also Church Place: alterations, for Burgh School Board.

IRELAND.

Belfast.—Ulster Volunteer Force Hospital: additional 100 beds.

Cork.—St. Finbarr's Collegiate Church. Mr. J. F. McMullen, M.R.I.A.I., architect, 30 South Mall.

Smithborough.—House, for Mr. Thomas Toal.

Tipperary.—Dispensary, Abbey Street. Board of Guardians' engineer.

A NEW Congregational chapel has just been opened at Llanharry, the cost being £700. The architect was Mr. Thomas, of Porth, and the builder, Mr. Davies, of Pencoed.

THE late Mr. H. J. Austin, of Lancaster, principal of the firm of Messrs. Austin & Paley, architects, who died on March 22 in his seventy-fourth year, left estate of the value of £38,997 (net personalty £23,816).

THE Governors of the National Gallery of Ireland have appointed Mr. W. G. Strickland to be director, in succession to the late Sir Hugh Lane. Mr. Strickland is the author of a comprehensive work entitled "A Dictionary of Irish Artists," published recently.

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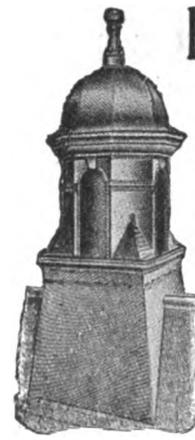
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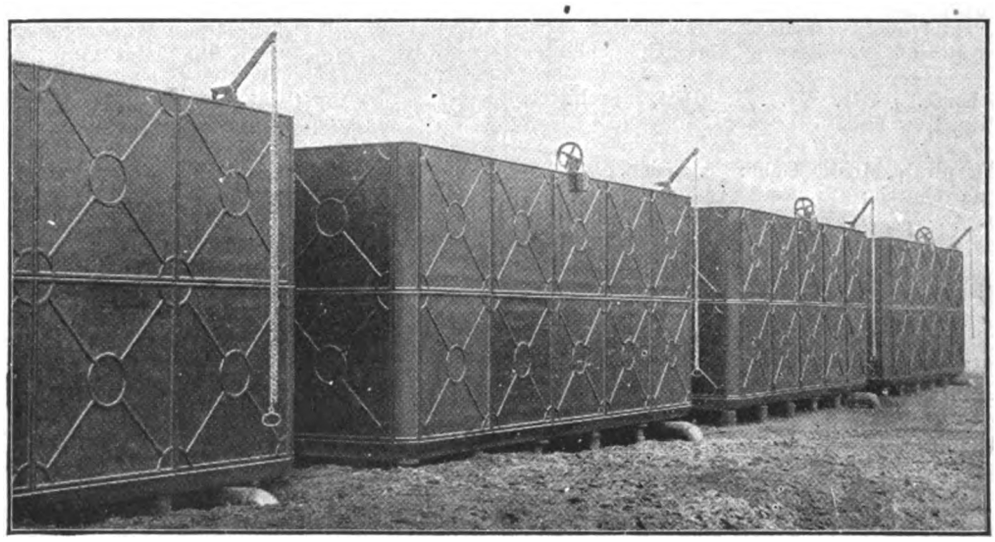
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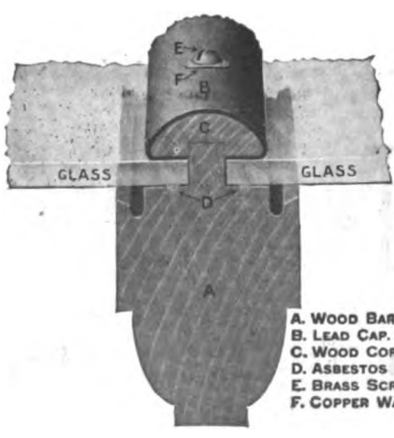
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THE
Architect and Contract Reporter.
FRIDAY, MAY 28, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—The Cleansing Committee of the Corporation of Dublin invite designs from landscape designers, &c., resident in Ireland for the laying-out of the reclaimed ground at Fairview, Dublin, and for the conversion of same into a public park. Premiums of £50, £10, and £5 will be awarded for the first, second, and third designs respectively, as selected. A copy of the conditions of competition, and a map of the site, will be furnished to each intending competitor on lodgment of £1, which will be returned on receipt of a design and report. Applications to be addressed to the Secretary, Cleansing Committee, Dublin Corporation, Lord Edward Street, Dublin.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s.* deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

BACUP.—For the alteration of buildings at Moorlands to sanitary conveniences, for the Corporation. Borough Surveyor, Bacup.

BLAINA.—May 31.—For repairing and painting, &c., of the King's Head Inn, &c., Blaina, also for converting two adjoining cottages into one dwelling-house, for Messrs. A. Buchan & Co., The Brewery, Rhymney, Mon. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

BLUE ANCHOR.—June 5.—For the carrying out of certain sea-defence works at Blue Anchor, near Minehead, for the Somerset County Council. The work consists of the provision of a concrete apron for a length of about 750 feet at the foot of the existing defences, and the construction of a length of 120 feet of new sea wall; also the construction of a reinforced-concrete casing to Pill Bridge outfall. Deposit £3 3*s.* Mr. E. Stead, A.M.I.C.E., county surveyor, Wells.

BRISTOL.—June 8.—For erection of a warehouse at Tylle Hill, for the Great Western Railway Company. The Engineer, Bristol Station.

CURBOROUGH.—For joiner and builder work required in extensions to the Smallpox Hospital for the Lichfield Isolation Hospital Joint Committee. Messrs. P. A. Benn & G. O. Rawstron, surveyors, Lichfield.

DINNINGTON.—For the several works required in extending the Wesleyan School. Messrs. W. J. Morley & Son, 269 Swan Arcade, Bradford.

GAWTHORPE (YORKS).—June 3.—For the various works required in erection of a manse for the Gawthorpe Congregational Church. Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects, surveyors, and valuers, Market Place, Dewsbury.

GOOLE.—June 2.—For erection of a cooling room at the public slaughter-house, for the Urban District Council. Mr. J. H. Castle, engineer and surveyor, Council Offices, Goole.

GREAT BARR.—June 5.—For the repairing and pointing of certain lodges on their estate, for the Walsall and West Bromwich Unions Joint Committee. Mr. A. H. Ward, clerk, 22 Lombard Street, West Bromwich.

GRIMSBY.—June 5.—For the alteration of premises, "Rutland House," Deansgate, into Council offices, for the Grimsby Rural District Council. Deposit £2 2*s.* Mr. A. Hobson, engineer and surveyor, West St. Mary's Gate, Grimsby.

HALIFAX.—June 7.—For pulling down buildings and removing materials (Hop Pole Inn and adjoining shop) in Bull Green, for the Improvements Committee. The Borough Engineer, Town Hall, Halifax.

HARRINGTON.—June 2.—For the various works required in connection with proposed alterations to No. 5 Church Road, Harrington, Cumberland, for the London Joint-Stock Bank, Ltd. Mr. C. W. Eaglesfield, architect and surveyor, Gordon Street, Workington.

IRELAND.—May 31.—For erection of a boiler-house and heating station at the Science and Art Museum, Kildare Street, Dublin. Deposit £1. The Office of Public Works, Dublin, and the Board's Workshop, Labour Exchange, Frederick Street, Belfast.

IRELAND.—June 19.—For building four labourers' single cottages and for fencing four plots, for the Castlebar Rural District Council. A contractor may tender to erect all the cottages and fence all the plots or for such proportion thereof as he considers he could complete satisfactorily in

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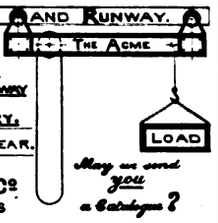
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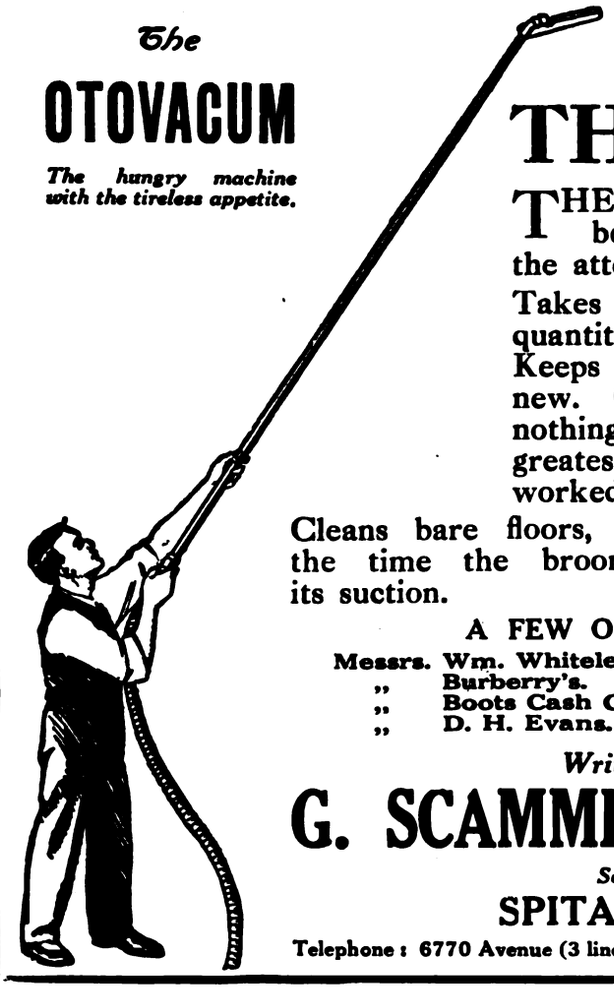
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the specified time. The works are to be completed within six months after they have been laid out by the Council's engineer under a penalty for delay. Charge 5*s*. The Clerk of the Rural District Council, Castlebar.

KELVEDON.—For erection of a pair of small villas on the London Road, Kelvedon, Essex. Mr. J. W. Start, F.S.I., architect, Colchester.

LEEDS.—For any of the various works required in erection of the "Regent Picture House," Burmantofts. Send application at once to Mr. F. Mitchell, architect and surveyor, 9 Upper Fountaine Street, Leeds.

MANCHESTER.—June 7.—For supplying and fixing tiled dados at the Old Hall Drive municipal school, Gorton, Manchester, for the Manchester Education Committee. Deposit £1 1*s*. The Offices, Deansgate, Manchester.

NUNEATON.—June 9.—For erection and finishing of new dye works, including dye houses, drying rooms, sorting, pressing, and finishing rooms, boiler house, and chimney shaft on the Newdigate Arms Estate, Nuneaton, for Messrs. Oram Bros. Messrs. Stockdale Harrison & Sons, architects, 7 St. Martin's East, Leicester.

PORTSMOUTH.—June 1.—For building and completing two blocks of cottages in Glasgow Road, Eastney, roadmaking, fencing, and other work, for the Executive Committee of the Friendly Societies. Mr. A. E. Cogswell, architect, Prudential Buildings, Portsmouth.

ST. IVE.—June 10.—For structural and other alterations in the St. Ive C.E. school near Liskeard. Mr. Scantlebury, architect, Callington, Cornwall.

SCOTLAND.—June 2.—For the brick and mason, carpenter and joiner, slater, plasterer, plumber, electric lighting, and painter works of porter's lodge, mortuary, boundary walls, entrance gates, roadways and footpaths to be erected at Heathfield Hospital, Ayr, for the Corporation. Mr. J. Young, burgh surveyor, Town Buildings, Ayr.

SCOTLAND.—June 4.—For (1) mason and brick works and (2) draining, levelling, and formation of grounds in connection with the proposed extension of cemetery, for the Kilwinning Parish Council. Deposit £1. Messrs. J. & J. Armour, architects, Irvine.

SHORTLANDS (KENT).—June 7.—For the construction of a subway and other works under the South-Eastern and Chatham Railway at Shortlands, for the Metropolitan Water Board. The offices of the Board (Chief Engineer's Department), Savoy Court, Strand, W.C. Send £5 deposit to the Accountant to the Board at Savoy Court, Strand, W.C.

WALES.—June 2.—For alterations and additions to the small cottage and conversion of two other cottages into a golf house at Maesdu, for the Llandudno Urban District Council. Mr. W. T. Ward, deputy engineer and surveyor, Town Hall, Llandudno.

WALES.—June 4.—For erection at their electricity and refuse destructor works at Porth of a water storage tank constructed of cast iron, pressed steel, or ferro-concrete, with a capacity of 30,000 gallons, for the Rhondda Urban District Council. Mr. J. M. Bowman, engineer, Electricity and Refuse Destructor Works, Porth, Rhondda.

WALES.—June 4.—For building twelve or more houses at Rhigos, near Hirwain. Mr. A. S. Cameron, architect, 14 Victoria Square, Aberdare.

TENDERS.

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For the decorations and painting work at the Empire Hotel, Buxton, for the proprietors, Messrs. Spiers & Pond, Ltd., to the specifications of their architect, Mr. F. LEGG.

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Campbell & Christmas, London	1,690 0 0
F. De Jong & Co., London	1,682 0 0
Aldin Bros. & Davis, London	1,667 0 0

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BARMING.

For the erection of the senior assistant medical officer's house at the County Asylum, for the Lunatic Asylums Committee of the Kent County Council.

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EPSOM.

For the erection of a shelter in Rosebery Park.

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Wiltshire	121 10 0
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HIGHTOWN.

For the erection of two houses, Lumley Street, Hightown, Yorks. Mr. F. SCATCHARD, architect and surveyor, Bank Street, Castleford.

Accepted tenders.

J. Wynne, builder, 32 Ridgefield Street, Castleford	£302 0 0
W. Holland, joiner, Carlton Street, Castleford	248 0 0
J. W. Keech, plumber, Sagar Street, Castleford	87 18 0
Beighton & Robshaw, plasterers, Louisa Street, Castleford	39 11 6
W. Allison, slater, Castleford	33 0 0

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LONDON.

For erection of a gantry at the general store, Belgrave Wharf, Grosvenor Road, for the Westminster City Council.

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LEICESTER.

For rebuilding the Star Inn, Belgrave Gate. Mr. W. T. GREWCOCK, A.R.I.B.A., architect, Leicester.

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Hutchinson & Son	1.890 0 0
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For the erection of a tuberculosis hospital at Normanston, for the East Suffolk County Council.

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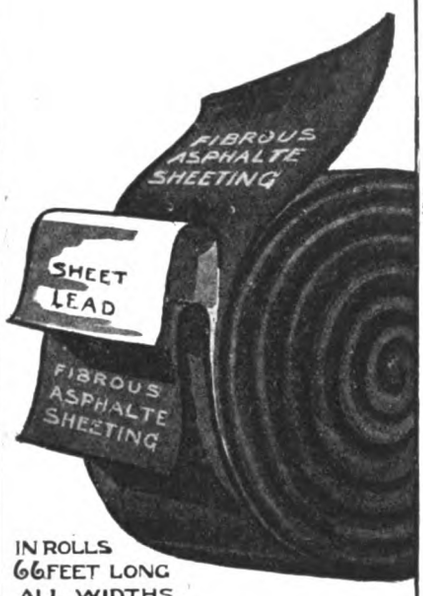
WELLINGBOROUGH.

For erection of a steel Dutch barn at the sewage farm, "Irthlingborough Grange," for the Wellingborough Urban District Council. Mr. R. S. HENSHAW, surveyor, Wellingborough.

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ARCHITECT AS ARBITRATOR.

THE powers of an architect under a building contract were discussed in the case of Reynolds *v.* Devis, which came before Justices Shearman and Sankey in the King's Bench Divisional Court on Thursday afternoon. It was an appeal by the defendant, Mr. Edward James Devis, fruit and potato merchant, of Peterscourt, Moor Green Lane, Moseley, Birmingham, from a decision of Mr. Verey, Official Referee, who had awarded the plaintiff, Mr. Andrew Reynolds, builder, of Edward Road, Birmingham, a sum of £240 for extras in the building of a private residence.

Mr. Arthur Ward and Mr. R. M. H. Clarkson were counsel for appellant, while Mr. Hudson, K.C., and Mr. J. G. Hurst, of Birmingham, appeared for respondent.

In opening the case Mr. Ward said that in the autumn of 1913 Mr. Devis, desiring to have a residence built upon land of which he was the owner, instructed Mr. Charles Hook Collett, architect, to prepare plans, specifications, &c., and to obtain tenders from various builders. Mr. Reynolds sent in a tender, and in January of 1914 agreed to erect the house for £1,150. An agreement was entered into, and one of its terms was that Mr. Devis might call in at his own expense an architect or surveyor during the progress or after the completion or alleged completion of the work, in which case the certificate in writing of such architect or surveyor that the work was duly completed, and of the amount, if any, due to Mr. Reynolds, after making allowance for penalties and for defective or uncompleted work and other extras and deviations, as the architect should think fair, should be a condition precedent to any claim by the builder and to any claim by Mr. Devis to deduct or recover penalties. The house was completed in August last year, and in regard to the extra work which was done, some was required by Mr. Devis, while the remainder was carried out at the request of Mr. Collett or the city authorities. A claim for extras was made by Mr. Reynolds, which appellant objected to pay, and subsequently Mr. Collett intimated that the builder was prepared to take £290 (including £50 retention fee) in settlement of his claim, expressing the view that this was a fair proposal from the point of view of both parties. Appellant, however, also declined to pay the amount, but after a conversation with Mr. Collett said he did not wish to be hard on Mr. Reynolds, and if the builder had had a "lean" job he was willing to pay £150 in full settlement. On the same day Mr. Collett gave Mr. Reynolds a certificate for £100, and when Mr. Devis heard of this he protested, remarking that while he was willing to pay for the extras he had personally ordered, he declined to pay £100 on account of the £290. The builder issued a writ for the £100, and when, a few days later, Mr. Reynolds applied for judgment to be entered for the amount, Mr. Devis filed an affidavit in which he said he had cancelled Mr. Collett's authority prior to the granting of the certificate, and leave to defend was granted. Shortly afterwards Mr. Collett gave his final certificate for £290, including the retention fee, and Mr. Reynolds claimed the amount. The case was heard by Mr. Verey, Official Referee, who found that when giving the final certificate Mr. Collett was acting under the contract as a quasi-arbitrator, that he was the architect "called in" by appellant, and that the certificates were given in good faith and were binding on both parties. Counsel now submitted that at the time Mr. Collett issued the certificate his authority had been cancelled, and that he had not been "called in" within the meaning of the agreement, and therefore had no power to make an award. Moreover, he said, the builder had, contrary to a stipulation in the specification, supplied materials and labour outside the contract without an order in writing, and counsel contended that the architect was not entitled to certify for such, as this was, in fact, making a new contract between the parties. Mr. Ward also insisted that the clause did not amount to appointing Mr. Collett as an arbitrator, and even if it did there was no final award or certificate by Mr. Collett.

Mr. Justice Sankey: Is your point this—that before an architect can give a certificate he must personally measure up?

Mr. Ward: I do not go so far as that.

Mr. Justice Sankey: If so he would have to be there the whole time.

Mr. Ward: I think not, my lord, for the measuring of extras, which can be done in quick time in the majority of cases. What basis of judgment would an architect have to measure a job he has not seen?

Mr. Justice Sankey: I am of opinion that an architect need not measure up personally, but can do it through the clerk of works.

Mr. Justice Shearman: I am of the same opinion.

Mr. Ward: Then I will not further argue that point. Counsel went on to contend that certain work which should have been included in the contract had been treated as extras.

Mr. Justice Shearman: But if the architect is the judge between you he is at liberty to judge wrongly.

Mr. Hudson, K.C., submitted that Mr. Collett had to act and perform certain things fairly between the two parties, and that constituted him a judge. Moreover, he had to perform some act deciding between the two parties, and that he had done in this case.

Mr. Justice Shearman: That will bring you home, I think, that he is the person to decide disputes.

Mr. Hudson: Yes, my lord, the clause is peculiarly drawn on purpose to dispose of every dispute that may arise between the builder and the building owner.

Mr. Justice Shearman: There is not a single word in the clause that it is to bind the parties, but it states that a certificate of the amount of money due shall be a condition precedent to any claim by either party.

Mr. Hudson: A certificate does imply a decision, the same as an award.

Mr. Justice Shearman: In this clause I observe the use of the word "deviations." That is an extremely strong word and means going outside the contract. I speak with bated breath, but one is so much at the mercy of architects. If you order a house for £2,000 you find the "extras" are £7,000 or £8,000. (Laughter.) The discretions in this contract are not nearly so many as in some contracts. The contention of appellant's counsel, I gather, in regard to this term—"a condition precedent"—is that you must define a finality or the thing would be useless.

Mr. Ward: In other cases the word "final" or "binding" is used. It is absent from this agreement, and I contend that you cannot put on the construction that it is binding on both parties.

Mr. Justice Shearman, in delivering judgment, said not without some little hesitation, but with no doubt eventually, he had come to the conclusion that the Official Referee was right. The contract provided for the payment of a lump sum, but, as his Lordship was afraid was not unusual in those cases, that sum was exceeded by hundreds of pounds, and a not unusual dispute thereupon arose between the builder and the owner. The Official Referee found that under the contract between the parties the final certificate was the final decision of the dispute, and in his Lordship's judgment that was a right decision, and was to be supported on that ground. There was not a single word in the clause of the agreement in question which said that the certificate should be final and binding. The whole structure of the sentence was that the certificate was a condition precedent to the bringing of any claim by one side or the other. That could only mean one of two things—either that the certificate was agreed by the parties to be decisive of all disputes, or else a mere document which was a condition precedent to an action and deciding nothing else. One had to consider what was the most reasonable construction consistent with the words, and his Lordship had ultimately come to the conclusion that they must from those words draw the inference—and particularly from the word "certificate"—that the parties agreed that the certificate should be binding and conclusive in disputes as to the amount due under the contract. The certificate for the £290 was the finding of a person in the position of a judge or arbitrator. His Lordship went on to point to the reference in the clause in question to extras, deviations, and so forth, and the use of the phrase, "as the architect shall think fair," and said he could not help thinking those words would be little short of nonsense if one did not infer from them that it was a point of agreement by the parties to abide by the decision of the architect as arbitrator as long as it was a fair and honest decision. He assumed that Mr. Collett occupied the position of a judge in disputes between the parties. It was just because Mr. Collett was an arbitrator and not a mere architect employed by the building owner that the latter could not put an end to his employment in his capacity as arbitrator. As to the con-

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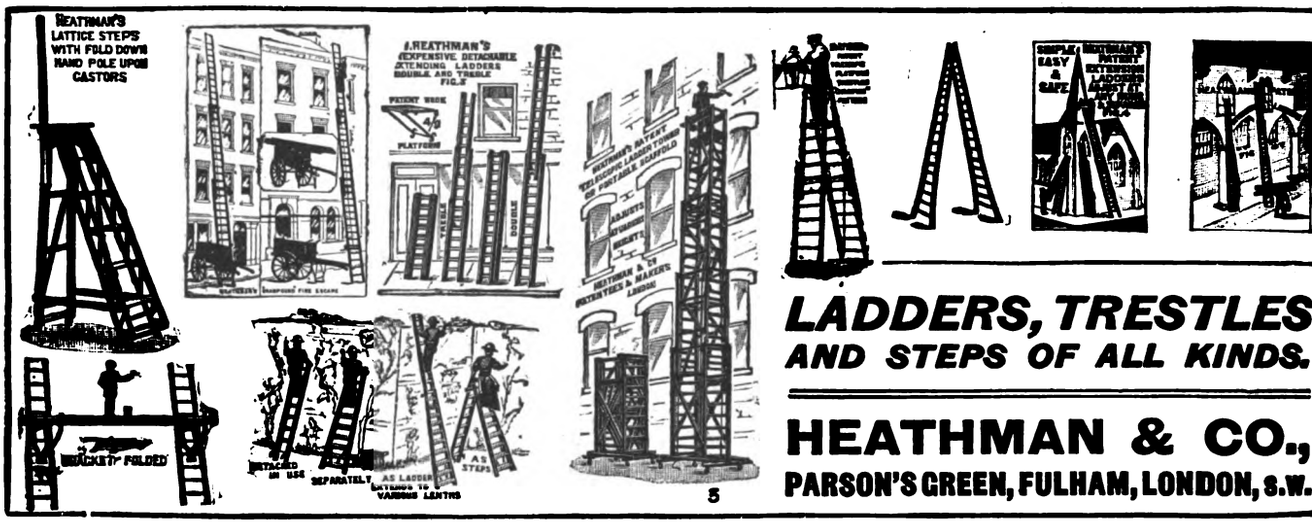
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tention that a number of extras had not been ordered in writing, and that therefore they were not payable, as this was, in fact, making a new contract, his Lordship remarked that in support of the contention they had been referred to a case reported in Mr. Emden's book, which was a decision to that effect. They had also been referred to a case in Mr. Hudson's book which reported cases decided on building matters. The Court had to choose between the authority of those two cases. His Lordship thought the Official Referee was right in saying that obliged him to disregard the fact that some of these extras were not ordered in writing, and that there was no ground why the certificate should be disregarded. As to the submission that certain work treated as extras was included in the contract, he had no doubt that work came within the extras or deviations. The appeal must therefore be dismissed with costs.

Mr. Justice Sankey delivered judgment to the same effect, and the appeal was dismissed with costs.

Mr. Hurst: And the money in Court to be paid out?

Mr. Justice Shearman: Yes.

LONDON ASSOCIATION OF MASTER DECORATORS.

A COUNCIL meeting of the above Association was held at the Holborn Restaurant on May 10, Mr. C. E. Wilkinson, President, in the chair. There were present the following members of the Council:—Messrs. J. Anderson, Walter A. Dix, J. G. Howard, Felix de Jong, Edwin Lott, J. Milton, F. S. Rowden, W. Stewart-Greene, J. G. Watson, H. G. White, and T. Willson.

A report was read from Mr. Arthur Wilcock as to the designs submitted for the certificate of the Association, and the report was accompanied by four designs which he had selected as possessing the highest merit and being most suitable for the purpose. After these four designs had been carefully inspected and discussed, a ballot was taken and the design submitted by Mr. Stewart-Greene was chosen, subject to modification. A committee, consisting of the President, Mr. de Jong, and Mr. Stewart-Greene, with Mr. Arthur Wilcock added as an associate, was appointed to have the modifications made.

The report of the Discounts Committee was submitted, and progress was reported, the matter to be left over until further correspondence had taken place with the National Light Castings Association.

The Convention Committee reported that it had been resolved that the meeting of the National Association of Master House Painters and Decorators, which it was intended to hold this year, be postponed until a later date. Mr. Stewart-Greene, as Chairman of the Convention Committee, explained that it had been agreed, subject to the approval of the London Association of Master Decorators, that a Convention be held in London in 1917.

The proceedings then terminated.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 1,428, Jan. 19, and 1,790, Jan. 22, 1914.—W. B. Cowell, 28 Berlin Road, Catford. Paving of roads.

7,120. March 20, 1914.—Edmond Coignet, Ltd., 20 rue de Londres, Paris. Segmental reinforced concrete constructions.

9,445. April 16, 1914.—J. R. Burton, "Upcote," Hammers Lane, Mill Hill, N.W. Inlaid work and apparatus therefor.

9,702. April 20, 1914.—J. F. Mackay, Bonaparte Park, Bordentown, Burlington, N.J., U.S.A. Heating apparatus.

9,919. April 22, 1914 (dated under International Convention Aug. 13, 1913).—W. A. Stedman, Box 124, Wonder, Churchill, Nevada, U.S.A. Ventilating apparatus.

9,956. April 22, 1914.—Robert Leeson, 27 Wood Street, Hyde Road, Gorton, Manchester, and W. J. C. Cheetham, 18 Lees Street, Higher Openshaw. Balancing device for sliding sashes.

10,530. April 28, 1914.—J. W. Fennel, 84 Carpenter Avenue, Newburgh, N.Y., U.S.A. Hose or pipe couplings.

13,564. June 4, 1914.—T. R. Paxton, Gatefoot Mill, Staveley, Westmorland. Securing and adjusting of door lock handles or knobs.

13,808. June 8, 1914.—C. F. Webb, Manchester Road. Preston, Lancs. Valveless flushing syphon cisterns for the flushing of water closets.

11,670. May 12, 1914.—G. M. Trimingham, 320 Ravenhill Road, Belfast. Sliding windows and the like.

12,087. Oct. 24, 1914.—S. M. Saunders, 43 Lower Moseley Street, Manchester. Heating arrangements for heating by hot water systems and such like.

16,742. July 14, 1914.—James Beresford & Son, Ltd., and H. J. Beresford, Cato Street Works, Birmingham. Ventilators and panels or plates therefor.

17,052. July 18, 1914.—M. J. D. Carter, 178 Pollockshaw Road, Glasgow; George Maurice and M. J. Railing, 67 Queen Victoria Street, E.C. Means for supporting electric lamps.

18,749. May 17, 1914.—M. C. Turner, 1,062 Park Place, Brooklyn, N.Y., U.S.A. Cabinets or baths.

23,912. Dec. 11, 1914.—T. J. Saunders and William Murray, Sanitas and Darnley Works, Barrhead, Scotland. Syphon cisterns for flushing water closets.

24,539. Dec. 23, 1914.—John Gravie, Forth View, Inverkeithing, Fifeshire. Machines for dressing paving setts.

24,823. Dec. 31, 1914.—E. R. Palmer, Hygiene Works, Wickham Road, Beckenham. Sanitary inspection chambers of manholes.

2,827. Feb. 22, 1915.—F. S. H. Seccombe, 6 Beechcroft Road, Oxford. New or improved water saturated blind or screen for windows, doors, and the like.

15,208. June 25, 1914.—S. J. Burgess, 9 Clothier Street, Willenhall. Trunk and other locks having endway sliding bolts.

4,870 of 1915, dated April 7, 1914.—W. C. Rees, 183 Willow Avenue, West Somerville, Middlesex, Mass., and Stanley Etherington, 10 Revere Street, Winthrop, Suffolk, Mass., U.S.A. Water closets.

16,493. July 10, 1914.—A. T. W. Andrews, 6 Orford Road, South Woodford. Holding up device suitable for fixing the baseboards of Venetian blinds and other similar purposes.

12,506. May 21 1914.—T. J. McKeown, builder, of Ballyblagh, Stewartstown, Tyrone, Ireland. Cutting of wedges and the like.

4,354. Feb. 26, 1908.—Frank Pascall, 24 Tankerville Road, Streatham Common, S.W. Combined domestic grates and stoves.

Any of the above specifications may be obtained from J. D. Roots & Co.

THE Town Council of Newark-on-Trent have appointed Mr. J. E. Wilkes, the deputy borough engineer of Northampton, as borough surveyor.

THE foundation-stone of a new church at Newport, Co. Mayo, was laid on Sunday last by the Most Rev. Dr. Healy, Archbishop of Tuam. The church is one of considerable size, its extreme length being almost 150 feet, and the width across the nave and aisles 62 feet 6 inches inside the walls. The building is the result of a bequest by the late Mr. Martin Carey, of Newport, who left £10,000 towards its erection. The architectural style of the building will be that of the Irish Romanesque, treated in a solid and massive fashion, the great west doorway being modelled on the famous doorway at Clonfert. The church will afford seating accommodation for about 1,150 persons. The architect is Mr. R. M. Butler, of Dublin.

THE Incorporated Church Building Society held its usual monthly meeting, followed by its Annual General Court, on the 20th inst. at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W., Lieut.-Colonel the Hon. G. H. W. Windsor-Clive in the chair. Grants of money were made in aid of the following objects, viz.: Building new churches at Gillingham, St. Augustine, Kent, £175; and Scotswood, St. Margaret, near Newcastle-on-Tyne, £80; and towards enlarging or otherwise improving the accommodation in the churches at Hultoft, St. Margaret, Lincs., £35; Lambeth, Holy Trinity, Surrey, £50; and Llanberis, St. Padarn, Carnarvonshire, £85. Grants were also made from the special Mission Buildings Fund towards building Mission churches at Coventry, St. Margaret, £20; Temple Fortune, St. Barnabas, Hendon, Middlesex, £40. The following grants were also paid for works completed: Haggerston, St. Augustine, Middlesex, £20; Sudden, St. Aidan, Rochdale, £175; Harlton, St. Mary-the-Virgin, Cambridge, £10; Longfleet, St. Mary, Dorset, £80; and Squirrel's Heath, All Saints, Romford, £35. In addition to this the sum of £70 was paid towards the repairs of ten churches from Trust Funds held by the Society.

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BIRMINGHAM NAVVIES' DISPUTE.

THE award of Mr. F. A. Greer, K.C., the arbitrator appointed to settle the disputes between the Birmingham Building Trades Employers' Association and the navvies employed by them, and between the road and general contractors carrying on business in Birmingham and the navvies employed by them, was issued on Saturday as follows:—

1 (*a*) That the minimum standard rate of wages payable by the Building Trades Employers to navvies doing usual navvy work in connection with building operations shall be 7½*d.* per hour.

(*b*) That the said rate shall be deemed to have come into operation on and after May 3 last, and shall continue in operation for the period of fifteen calendar months from and after the said date, and thereafter until the expiration of three calendar months after notice to determine the same shall have been given either (*a*) by the said Labourers' Unions on behalf of the men, or (*b*) by the said Employers' Association on behalf of the employers.

2 (*a*) That the minimum standard rate of wages payable by employers employing navvies on road or general contract work (excluding building operations) shall be 7*d.* per hour.

(*b*) That the said last-mentioned rate shall be deemed to have come into operation on and after May 3 last, and shall continue in operation for the period of fifteen calendar months from and after the said date and thereafter until the expiration of three calendar months after notice to determine the same shall have been given either (*a*) by the said Navvies' Union on behalf of the men, or (*b*) by the duly authorised agent of the majority of the contractors in the Birmingham district who, as part of their ordinary business, undertake road work or other work on which navvies are employed, other than building operations.

VARIETIES.

WE regret to announce the death of Mr. Robert Fellowes Chisholm, F.S.A., F.R.I.B.A., late consulting architect to the Government of Madras, which occurred on the 23rd inst. at his residence in Southsea. Besides being an authority on Indian architecture, Mr. Chisholm carried out some important work in this country, including the First Church of Christ Scientist in Sloane Square, S.W. (*Architect*, August 19, 1910).

COUNT G. N. PLUNKETT, H.A.R.I.B.A., an Academician of Rome and Florence, has been elected honorary member of the Royal Society of Miniature Painters, and also of the National Society of Art Masters.

SUBJECT to legacies to members of his family and to friends, the bulk of the late Sir Hugh Lane's estate, which consists mainly of pictures of considerable value, is bequeathed to galleries in Dublin and London.

THE Local Government Board having refused to sanction a loan by the Selby Urban Council for building houses for the working classes, the Council have appointed a deputation consisting of the Chairman and Clerk to wait on the Board and point out the great need for the houses.

MR. WALTER CRANE, R.W.S., the artist and writer, who died on March 14 last, aged sixty-nine years, left unsettled property of the gross value of £3,119, with net personalty £2,676. Letters of administration have been granted to his son, Mr. Lancelot Crane, of Knob Hill Farm, one of the next of kin.

THE Easington Rural District Council have received eleven tenders for the erection of the proposed fifty dwellings, &c., at Shotton, the amounts ranging from £13,025 to £15,639. It has been decided to approach the Local Government Board for authority to proceed with the scheme. Mr. G. Waterhouse, of Easington Colliery, is the architect.

A LONG discussion took place at the quarterly meeting of the Lancashire Asylums Board at Preston last week upon a recommendation of the Finance and General Purposes Committee that an application be made to the Local Government Board for leave to borrow a sum not exceeding £27,500 for the completion of the new annexe at Whittingham Asylum. The recommendation was adopted.

THE Albert Medal of the Royal Society of Arts for the current year has been awarded by the Council, with the approval of the President, H.R.H. the Duke of Connaught and Strathearn, K.G., to Professor Sir Joseph John Thomson, O.M., D.Sc., LL.D., F.R.S., for his researches in physics and chemistry and their application to the advancement of arts, manufactures, and commerce. The Albert Medal was founded in 1863 to commemorate the Prince Consort's Presidency of the Society, and is awarded "for distinguished merit in promoting art, manufactures, and commerce."

THE Board of Education have written to the Southampton Education Committee approving the proposals of the authority with regard to the provision of school accommodation on the Polygon site, sanctioning premises capable of accommodating 1,200 children, and permitting the use of the infants' building exclusively for a school for mentally defective and epileptic children. The letter conceded the desires of the authority, which were at first refused by the Board of Education.

THE Council of Bristol University have decided to proceed forthwith to the erection of additional buildings, the money for which has been given by Mr. George A. Wills, chairman of the Imperial Tobacco Company, and his brother, Mr. H. H. Wills. Originally they gave £180,000 for the purpose, but as the accepted tender greatly exceeds that amount, they have added £40,000, making a total benefaction of £220,000. The erection of the buildings now to be undertaken will occupy from three to four years. Messrs. Oatley & Lawrence are the architects.

THE Government of India are prepared to consider tenders for a licence to extract and purchase padouk and other timbers for twenty years from (1) the North Andaman with Interview, Bennett, and all other islands North of Austin Strait, (2) the Middle Andaman, with certain exceptions. Tenders may be submitted for either or both these areas. Further particulars, in addition to those given in our advertisement columns, may be procured from the Revenue Secretary, India Office, S.W.

THE funeral took place on the 20th inst. at Brooklands Cemetery, Manchester, of Mr. W. G. Sutherland, of Ashton-on-Mersey, editor of the "Journal of Decorative Art" and secretary of the National Association of Master House Painters and Decorators. Representatives of the Association from London and the south and from many towns in the north attended, including the president, Mr. J. Higson. The late Mr. Sutherland founded the Association twenty-one years ago. He was on the Government Commission to investigate lead poisoning.

THE Council of the Manchester Whitworth Institute has passed a resolution to the effect that during the continuance of the national financial strain caused by the war it is desirable that the Public Art Galleries and Museums of the country should continue, as far as is compatible with the general interest, at least such parts of their work as will find occupation for living artists and craftsmen, so that this important section of the community may not be unnecessarily impoverished and discouraged.

AT a meeting of the Hull Corporation Health Committee it was formally reported that a handsome offer of eligible land had been made by Mr. Christopher Pickering for the building thereon of houses for the working classes, and that, on the suggestion of the Committee, Mr. Pickering had extended the time for the consideration of the purchase until after the conclusion of the war. The land is situated between the Hessle Road railway crossing and Pickering Park, and it was proposed to lay it out as a garden village.

THE Rev. W. F. G. Sandwith, Rector of St. Bartholomew the Great, West Smithfield, writes that in June 1913 he appealed on behalf of the Restoration Committee for £1,500 to carry out the work on the south side of the church and for other objects. Nearly £1,000 was subscribed, which enabled the most urgent part to be put in hand. The work was completed by the following June, and the choir vestry was to have been opened in October, but the outbreak of the war prevented it. In December last the old houses in Cloth Fair were demolished, with the result that the only remaining bay of the nave on the north side of the church was uncovered. Though of particular interest the wall was in a deplorable condition, and it was necessary at once to take steps to make it secure. The work on the south side of the church cost more than was expected, and the north bay of the nave has cost a further £130, so that the committee is in debt to the extent of £400. The Bishop of London has consented on June 9 to open the new choir vestry, on the site of the old south chapel, and to celebrate the occasion of the reopening of the ancient window of the nave. In making an appeal for £900, which will include the cost of installing electric light, the Rector points out that the greater part of the liability was incurred before the war commenced.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, June 4.

Institution of Municipal and County Engineers : Scottish District Annual Meeting at Ayr (two days).

Saturday, June 5.

Institution of Municipal and County Engineers : Eastern District Meeting at Southall, at 2 P.M.

Monday, June 7.

Royal Institute of British Architects : Business Meeting, at 8 P.M.

Friday, June 11.

Royal Sanitary Institute : Provincial Sessional Meeting at Bristol. Discussion on "The Co-ordination of Military and Civil Sanitary Services in War Time," to be opened by Dr. D. S. Davies, medical officer of health, Bristol, at 11 A.M.

Saturday, June 19.

Edinburgh Architectural Association : Visit to Melville Castle, Laswade.

Shakespeare Reading Society : Visit to the Tower of London.

HISTORIC MONUMENTS IN WAR.

IN an anonymous pamphlet which is now being circulated is contained a record of resolutions of protest, official correspondence, and other data relating to the destruction of historic monuments during the war, revised (in the latest edition) to May 1, 1915. The object of the publication—which the anonymity of the author shows is issued with the single-minded intention of philanthropic endeavour—is expressed in the following appeal :—

"There are times in our lives as we look back into the bygone days that seem to be enshrined in hallowed light—times when we seemed for the moment to pass from the material cares of daily life into a holier and calmer atmosphere. It may be that in your life there are these cherished memories of precious hours spent within the walls of a great cathedral. As the mellow tones of the organ quivered to you along the vaulted aisles, your gaze wandered far away into 'twisted tracery and starry light,' and you felt in the sacred presence of 'the only witnesses perhaps that remain to us of the faith and fear of nations.' Here in a transient world was something nearly eternal. Here was something which had a mysterious quality before which the rudest robber knight had quailed, something so majestic that untold generations had bent the knee in lowly reverence as they saw 'those grey heaps of deep-wrought stone.'

"To-day. the times have changed, and these noble buildings stand in deadly peril. They cannot defend themselves, but the souls of those who created them cry out for aid in their hour of need. Can *you* do anything? What is one voice against that mighty, merciless batter of guns? Little enough truly, but yet of such power that, given a sufficient number of voices, even the mightiest gun must turn away. Will you therefore—in memory of those hours of long ago—take up your pen and ask the Government of the country of which you are a citizen to accord their prompt assent and subsequent support to any proposal that may be made to them for the appointment of an International Commission, instructed to study the question of the preservation of historic buildings during the war, and empowered to take any action in pursuance of that end that appears to them in the circumstances to be advisable. Will you do more? Will you buy copies of this appeal—which are supplied at the bare cost of production—and have them sent to your friends so that they may also express their will, and in their turn send on this appeal to their friends? In this way the appeal will be scattered far and wide over the earth, and the strength of the voices may be so great that the muttering guns will have to recognise them.

"No copyright has been taken out. You may reprint at will, or on application to Messrs. Hooker, printers, Westerham, Kent, England, further copies will be sent either to you or to any names and addresses you may give. Copies will be addressed, stamped and posted for an inclusive payment per copy of 4 English pence, 50 French centimes, or 10 American cents. The appeal cannot be sent to Germany or Austria, but if copies happen to reach those countries, it may be found that there are still citizens there who—leaving aside recrimination—will join their voices in this attempt to save the world's historic buildings."

Perhaps of all the destructive acts of the German Army in the present war, the bombardment of Rheims Cathedral is that which has most deeply affronted the feelings of the civilised world. The Germans assert that the Cathedral was used for military purposes. General Joffre reports to the French Minister of War that "the Military Commandant at Rheims has at no time ever placed, or caused to be placed, any post of observation in the Cathedral." The statement of General Joffre may be believed; but, on the other hand, it is but fair to presume that the Germans would think it inconceivable that the French, or any military commander, would abstain from using such a coign of vantage for the purpose of observation. No German would hesitate for a moment to do so, and could not credit his enemy from doing otherwise. Take, for instance, the example of Malines Cathedral. On September 2 and 27 this was bombarded by the German Army. When the invaders became possessors of Malines, the belfry of the Cathedral was, as recorded in a German newspaper, utilised to direct the artillery battle along the Nette. Thus we have a clear proof that the Germans would and do make use of any lofty structure that offers them an opportunity for the all-important function to an artillerist of a point of observation. Therefore, from their point of view all possible observation points must, of "necessity," be bombarded.

In the pamphlet before us the author says: "It is difficult not to understand and sympathise with this point of view, but the commander ought not to be placed in such a position. For where does this view lead us to? Is the civilised world, for example, going to be content to sit by with folded arms while the commander of an Austrian Dreadnought works his will on Venice, or may Nuremberg be set on fire as a punitive act? The ideas are almost unthinkable, yet it is necessary to realise that these and even worse disasters are definitely within the range of possibility unless some early restraining international action is taken."

To promote such international action, it will be gathered from the appeal we have transcribed, is the object of the present publication. The intention is excellent; the efficacy of any international action, in the present war, we are pessimistic enough to believe, is more than dubious. The disregard of the Germans for

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any international action that might be taken—and obviously only neutrals could take such action—is notorious. They recognise nothing as superior to what they conceive to be military necessity.

It is not alone those historic monuments whose altitude renders them possible vantage points for observation that are in danger of destruction by military necessity. Any building that might be a shelter for troops or be used for any military purpose, is to the German commander a proper target for his guns and his bombs. Nay, more, any destruction which may cause loss or annoyance to an enemy is to the German commander a legitimate operation of war; more especially if it is likely to afford an opportunity for "frightfulness," or, in plain English, bullying. Hence it is undoubtedly the fact that the bombardment of Rheims was deliberately intended as a "grievous outrage to French national sentiment." The misfortune is, from our point of view, that the present-day German is such a terribly bad psychologist. What he imagines to be "frightfulness" but steels the determination of his opponents. The Prussian has succeeded in bullying the rest of the German peoples, but the other nations of Europe are of a different fibre.

The only international action that is likely to have the least beneficial effect in saving the historic monuments of Europe in the present war is the enforcement on the German mind that every historic monument damaged, whether from military necessity or otherwise, means a more severe retribution, not reprisal, to be exacted from the apostles of "frightfulness" when the bully of Europe is overpowered and crushed.

NOTES AND COMMENTS.

THE discussion in the columns of the *Morning Post* of the—shall we say?—quarrel between the trustees of the Chantrey Bequest and the trustees of the National Gallery is in these times scarcely likely to gain such attention from the Philistine as it might attract under happier circumstances. The position is quite clear. The Committee of the National Gallery Trustees are justified in feeling that they may be held accountable to the public for the choice and reception of the works exposed on the walls at Trafalgar Square and Millbank, and hence may be expected to raise objections to any other body being allowed to enforce a reception upon them of any works whatever, quite irrespective of the merit of those selected by the Chantrey Trustees. The art world may be expected to take sides and, on the one hand, to support the National Gallery Trustees, and, on the other, to regard as prejudiced the statement by the Committee of those Trustees that—

(*a*) many of the Chantrey pictures are of inferior merit, and are a discredit to the walls of the gallery;

(*b*) the low standard set by these paintings renders it impossible for the trustees of the National Gallery successfully to invite distinguished British artists to sell their pictures at modest prices for the honour of being represented in the National Collection, as is frequently done in France;

(*c*) a double standard of admission is set up, the Trustees sometimes refusing pictures superior in artistic merit to those which are simultaneously purchased under the Chantrey Bequest;

(*d*) while the older British masters with difficulty obtain admission to the National Collection, the younger generation enters with a rush by the Chantrey door;

(*e*) really valuable offers of pictures to the nation are withheld because of the distrust and hostility thereby aroused;

(*f*) a number of the foremost modern British painters, whose works are eagerly bought for Continental galleries, remain entirely unrepresented in the gallery which affects to represent the contemporary art of this country.

We sympathise with those who are making protest against the removal to another site of the Tolbooth or Cross Steeple at Glasgow. A monument that is shifted from its original position is never the same as it was, even if the greatest care be taken to number all the stones and to rebuild in the same form. Usually, moreover, accidents happen. Some of the old material is found to be too bad for re-use, some gets cleaned up and some too often is mislaid. The shifting of the Steeple may be an improvement. It cannot be said to be a necessity, and ancient monuments should only be shifted to meet an undoubted necessity.

It is no wonder that with a loss of £508 on the last autumn exhibition and the influence of the war that the Library, Museum, and Arts Committee of the Liverpool Corporation should by a majority decide in favour of restricting both the extent and the duration of the exhibition this year. We notice, however, in the report of the discussion that certain obvious facts appear to have escaped notice. If the exhibition is reduced in extent, its attractiveness will be less and the takings will still further diminish, whilst the reduction of the time means that the greater part of the expense, the collection and return of the exhibits, will bear a considerably larger proportion to the whole, and the earning period will be weighted by too great a load of non-productive expenditure. So that, in our opinion, the remedy is likely to intensify the ratio of expenditure to income.

A cheque for £56,270 has been received by the City Treasurer of Bradford from the Board of Inland Revenue, this large amount representing refunded income tax paid by the Bradford Corporation during the last twenty years. It appears that the Bradford Corporation, along with other Corporations, have been at variance with the Inland Revenue authorities for over twenty years as to the basis on which Corporations should be charged income tax, and several cases have been brought before the Courts. The contention of the Bradford Corporation has been that they should be treated in precisely the same way as the individual, who is allowed to set his losses on one undertaking against his profit on another, and pay tax only on the net outcome. The Inland Revenue authorities contended that the various undertakings were separate entities, and that the Corporation were liable to pay tax on their profits, and also to hand over income tax deducted when paying interest on loans in respect of non-productive departments. Later on they somewhat modified this position, but in a way not satisfactory to the Corporation, and the interests of the city have been maintained by appealing each year against the assessments, and so keeping the matter open in order that upon a final settlement its operation should be retrospective. Ultimately, the matter was taken up by the Municipal Corporations Association, and a test case was fought in the interest of Corporations throughout the country, the various authorities sharing the expense. The case was taken to the House of Lords, who gave their decision in 1913. The effect, broadly, is that for income tax purposes a Corporation is to be regarded as one person, not as two persons, one acting as a municipal authority and the other as the sanitary authority. Within those two groupings a Corporation is now entitled to set off the balance of any taxed profits on trading undertakings against the interest on non-trading departments (such as the Town Hall, sewage works, parks, &c.), and to retain to that extent the income tax deducted when paying interest on loans. Though not conceding to Corporations the whole of their contentions, the settlement, to a large extent, obviates the double assessment which had been one of the main points fought against, and as a result of which the very substantial refund mentioned has been secured at Bradford.

The London Chamber of Commerce and the Belgian Committee for Trade with the Allies have taken steps to urge British electrical manufacturers to prepare for brisk business with Belgium immediately the invaded territories are free. The London Chamber of Commerce state that,

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through their electrical section, they would give every assistance to those who desire it. They trusted that when they were once more established in Brussels the British Chamber would be able to help the Belgian Committee for Trade with the Allies to drive the commercial Huns from Belgium.

In a lecture given under the auspices of the two bodies, M. R. Stylaers explained that, often by insidious methods through the medium of companies with Belgian and French names, before the war 95 per cent. of the electrical supply business of his country was dominated or controlled by German manufacturers. The Siemens Trust was favoured with many French and Belgian Government contracts, and the electrical equipment of the harbour at Zeebrugge and of the Antwerp forts was thus well known to the enemy, who had employed his knowledge against Belgium. Belgians desired to recover their economical independence in the same way as they were reconquering their territorial independence. For the industrial rebuilding of Belgium, the electricians of that nation now in this country should induce the British manufacturer to produce such goods as would meet the requirements, habits, and working methods of the Belgians. Frankly expressed, the position was that the Belgian electrician desired credit and the British manufacturer wanted the business.

In his presidential address at the annual meeting of the Royal Victorian Institute of Architects, Mr. H. W. Tompkins described the effect of the war on our colleagues in the Commonwealth. He said:—"The first half of last year was most prosperous to architects, builders, and the thousands who are benefited, directly or indirectly, by the building trade. Practically all architects had a very large amount of work in hand, and plans were in preparation for very much more work, and the year promised to establish a record in the building trade. The declaration of war, however, had a paralysing effect; instantly all work not actually commenced or financed was stopped, and a very large number of men are, consequently, thrown out of employment. I do not see why this paralysis should continue to affect the building trades to the extent which it has affected the building trades, but there are still a number of opportunities to invest money in buildings to advantage, as a number of business firms and others still require alterations to provide for increased accommodation. I would remind owners that, by putting work in hand at the present time, they will relieve a large amount of distress and save from 15 per cent. to 20 per cent. on the cost of construction. As architects, we have no reason to be pessimistic. War or no war, immediately a good season is assured, there will be a decided improvement in the building trades, which will certainly be followed by a building boom upon the proclamation of peace."

In comment upon this the Editor of the Institute's *Journal of Proceedings* very truly remarks:—

We are of opinion that there are two principal causes which, either separately or jointly, have brought about the existing conditions. The first is financial stringency, whilst the second may be described, in short, as "funk." The former cause was by far the more important. A state of war generally brings about a forced circulation of money, which, however, is spent not in the production of that which enriches a country, but in the production of materials necessary for the war. As this expenditure *must be met*, the money which would be used under normal conditions to develop the resources of a country is greatly reduced in circulation. The building trades—so far as projected work is concerned—are amongst the first to suffer. Where the erection of a new building has been financed, or where the building has been actually commenced, the work is most likely to be pushed on with; but where it has not been financed at the time of the breaking out of war, there is likely to be a hitch, and the job—to use a common expression—is "stuck up."

A Special Investigation Committee, reporting to the Northern Sectional Conference on the provision of arterial roads in Greater London, state that the North Circular Road, east of the Edgware Road, would, in their opinion, be of the utmost value. The fact that the Hendon, Finchley, and Edmonton Urban District Councils have received permission to prepare town-planning schemes, and that Southgate Urban District Council are applying for similar powers, should facilitate fixing the route. There does not appear to be any conflict of opinion between the local authorities concerned as to the line, and the Committee consider that it is important to fix it forthwith while so much of the land is open. The connection between the Edgware and Cambridge Roads is of itself most important. In deference to the opinion of the Barnet Urban District Council and the Herts County Council, the widening of High Street is recommended in lieu of the proposed by-pass at Chipping Barnet. While the Committee consider that the proposed new Cambridge Road is not of the same importance as the North Circular Road, they are of the opinion that, in view of the future, it is most important that the opportunity of securing a great part of the line now by means of town-planning should not be lost, and they recommend that the Conference should draw the attention of the local authorities concerned to the matter. As to the proposed road between Essex Road and Lea Bridge Road, two routes have been suggested, one by the London Traffic Branch *viâ* London Road and Shacklewell Lane, and one by the London Society *viâ* Pembury Road and Dalston Lane. The former is the shorter, lends itself better to improvement, and is approved by the engineer to the Hackney Borough Council. The Committee recommend that the London Road and Shacklewell Lane route should be adopted. In regard to the proposed new road between City Road and Hackney Road, the route is still available, as originally suggested by the London Traffic Branch of the Board of Trade, to connect the Eastern Avenue with the Western Avenue, *viâ* Pentonville, Euston and Marylebone Roads, and no alternative route has been put forward. The Committee consider this a very important improvement in order to secure proper East and West through communication, and they recommend that, as the property involved is almost entirely of a poor class, steps should be taken to prevent the erection of new buildings along the route, unless set back to the proposed new frontages.

WAR ITEMS.

IN view of our incalculable indebtedness to the gallant Belgian nation, a War Exhibition has been organised to assist the funds of the Belgian Red Cross Anglo-Belgian Committee, whose patroness is H.M. the Queen of the Belgians.

The War Exhibition, 1915, is designed to present in an interesting and instructive manner an idea of the extent to which science and industry are being utilised in every branch of the present gigantic struggle.

A striking feature is a magnificent 13,700 sq. ft. mural panoramic representation of Belgium. This portrays, amongst other scenes, the beauties of Brussels, Antwerp and its magnificent port, Bruges (the Venice of the North) with its many bridges, Ghent, Ostend and the Coast, Liége, Namur and the Valley of the Meuse, including the ill-fated Dinant, Louvain, Malines, Ypres, and Visé, the first town to fall temporarily under the iron heel of the barbaric Hun.

As the War Exhibition, 1915, will be the only important Exhibition in London throughout the coming summer, it should prove a great stimulus to recruiting.

The Exhibition is to be made as comprehensive as possible in the space at disposal, and the leading representatives of the allied and neutral Governments will be

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specially invited to visit and interest themselves in the Exhibition, so that the event may afford a unique opportunity for manufacturers and business houses to bring forward their products, and thus to help in the solution of the problems of equipment, food, hygiene, &c., each of which plays so important a part.

Season tickets are being issued at £1 1*s.* each, carrying the privilege of the holder admitting a different friend at each visit if desired. It is hoped that a large application by the public who desire to help will be made for these season tickets, and it may be mentioned that they will be available on all the national and international days which are being arranged throughout the season.

The Exhibition comprises seven sections, each of which is of importance and interest, the whole forming a comprehensive War Exhibition.

Section 1.—*Trophies of War* from the most important battle-grounds.

Section 2.—*Armament and Ammunition in the Making.*—Demonstrating the manufacture of all kinds of munitions of war.

Section 3.—*Red Cross Work, Hospital and Nursing.*—Showing the magnificent work in the cause of humanity done by the noble women of all branches of the nurses' profession.

Section 4.—*Science and Industry as Applied to War*, including the latest scientific instruments used in connection with war. Industries devoted to the requirements of all branches of military and naval activity.

Section 5.—*Food and Hygiene.*—A special site will be set aside for the exhibits of manufacturers and traders who specialise in the supply of foodstuffs of every description for War Office requirements, for invalids, wounded and convalescents, and for general use by our brave men in the field; also of hygienic preparations and apparatus.

Section 6.—*Equipment.*—A most important section, which will show every equipment necessity of officers and men. A prominent feature will be nursing equipment of all kinds for hospital and field service. Working exhibits, lectures, and demonstrations in this section will provide immense general interest.

Section 7.—*Maritime and Aerial Section.*—Will comprise the latest inventions in naval and aerial warfare and for the welfare of our men afloat.

The Prince's Skating Club, Knightsbridge, S.W., situated in the best part of London, has been selected as the most suitable place in which to hold this Exhibition. A continuous service of motor 'buses and tube trains provide the easiest and quickest of access from all parts of the Metropolis, as it is within a few minutes' walk of Knightsbridge Station and Hyde Park Corner and other stations whence connection is made with all London termini.

There will be an ample provision of amusement attractions, each in keeping with the character of the whole Exhibition.

The assistance of the most renowned operatic and dramatic artistes is being enlisted to provide a constant and ever-varying programme of entertainment from week to week throughout the run of the Exhibition, and arrangements have also been made for an exceptionally fine orchestra.

Offers of interesting war trophies as loan exhibits, or assistance of every kind towards making the Exhibition the great success it deserves to be on account of its object, will be welcomed by the Hon. Organising Secretary, War Exhibition, London Chamber of Commerce, 97 Cannon Street, London, E.C.

POSTPONEMENT OF R.I.B.A. PRIZES AND STUDENTSHIPS, 1916.

On the recommendation of the Board of Architectural Education the Council have decided that, owing to the existing conditions the competitions for the prizes and studentships postponed from last year shall be further postponed until next year, with the exception of the Ashpitel Prize.

SOUTH AFRICAN BRANCH OF THE SOCIETY OF ARCHITECTS.

On account of the activities of the Society of Architects' Branch at Johannesburg being restricted during the war, and there being less need of funds for general purposes, it has been decided to vote the money usually expended on social functions and visits to works to the relief of distress.

The branch has voted a contribution of £25 to the Governor-General's Fund for the relief of distress caused by the war, and has also sent a sum of ten guineas to the funds of the Professional Employment Committee of the Architects' War Committee. The Council of the branch also report that the South African School of Mines and Technology has accepted the offer of the South African Branch of the Society of Architects to give prizes of a total value of ten guineas to members of the architectural classes at the school in the subject of architectural history and studio class work.

ART IN LONDON.

AT THE LEICESTER ART GALLERIES.

MESSRS. ERNEST BROWN & PHILLIPS must be heartily congratulated upon the very excellent menu prepared for the public; without exaggeration they have provided an Olympian feast in the series of paintings from the brushes of Lady Butler and Mr. Alfred Parsons, R.A.

Of the work by the latter artist we are not invariably enamoured, but of his water-colour studies now on view it is impossible to speak in too high praise; he shows himself so fully in sympathy, so fully at one, with his various subjects, and his hand interprets what his eye so appreciatively notes. We will select for mention just a few of the most striking amidst a compelling display—works such as "Thornham Mill," "Bickleigh," "Wild Snowdrops," "Marshes at Holme-next-the-Sea," "Sea Lavender," "Wild Iris," "A Bridge over a Dyke," "Sea Holly," and "The Saw Mill." The subjects are as varied as the districts, but the artist's surrender of himself to his subjects is equally apparent throughout. One perforce recalls to mind Tennyson's fine lines, "Love took up the harp of Life, and smote on all its chords with might; Smote the chord of Self, that trembling passed in music out of sight"; and so in Mr. Parsons' work the music of his art conceals in place of revealing the ego, which is so often insisted upon by artists.

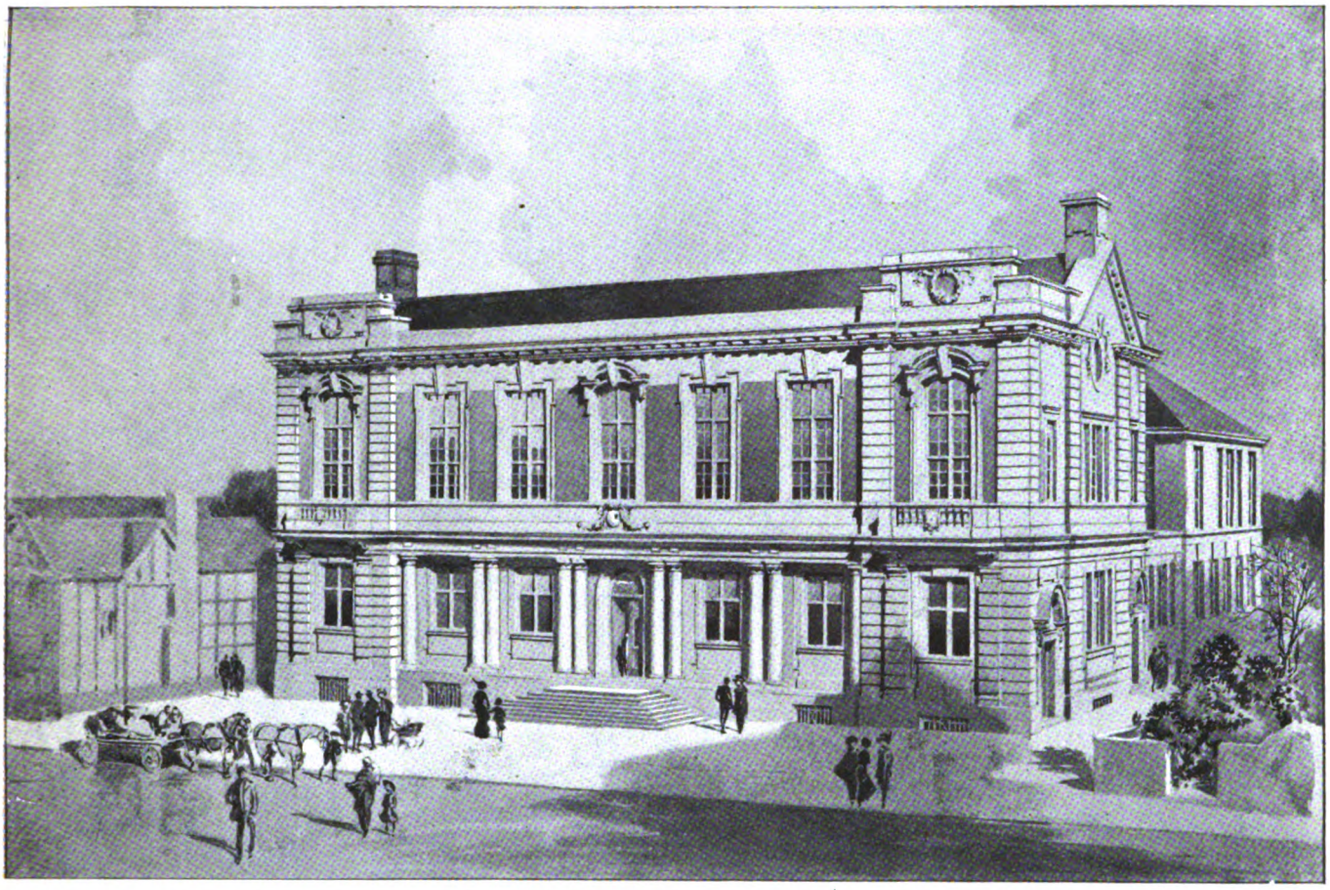
And when we regard Lady Butler's work, we once again recognise the true interpreter, though here it is no longer the display of smiling Nature, but of those who in the course of their ruthless task deface the glories of the field and hedgerow, trample under horsehoof and gun-carriage the bounteous provisions of Ceres and Flora, and incarnadine the land with tones with which it was never intended that it should be dyed. We have but one sentiment respecting Lady Butler's work, and that is unstinted praise for her spirited interpretation of her subjects, and for the high level of achievement attained and maintained from the days of her girlhood, when at the age of nineteen she produced the world-famed "Roll Call," up to the present year of grace, with so many years of life behind her. "Scotland for Ever" (the *pièce de résistance* of the present display) is beyond praise, nor will we attempt phrase-making, merely remarking that, had this been the artist's sole contribution to the world of art, it would have given her both name and fame. In this centenary of the Waterloo campaign, in the midst of war so much more colossal than the century-old Titan struggle, it is well that this display of Waterloo pictures should have been submitted to the public; and the proposed devotion of the funds for the assistance of officers' families is another and the latest instance of the patriotism and generosity which inspires the British public during these days of storm and stress.

ILLUSTRATIONS.

ALMSHOUSES, ELTHAM, KENT.

SIR ROBERT GEFFRYE, who was Lord Mayor of London in 1686, by his will bequeathed to the Wardens and Commonalty of the Mystery or Art of Ironmongers of London certain real and personal estate for the erection and maintenance of almshouses for poor people. The bequest amounted to £1,534 13*s.* 9*d.* In 1712 two adjoining plots on the east side of Kingsland Road, Shoreditch, were pur-

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COMPETITION DESIGN FOR MIDDLETON TOWN HALL.—Mr. GEO H. WILLOUGHBY, F.R.I.B.A., Architect.

chased by the Company for £220. About three years later the almshouses were erected at a cost of nearly £4,500. In 1908 the Company proposed to remove to a more rural district, and to dispose of the site to the Peabody Trustees for £23,500, so that it could be utilised for model dwellings. Strong opposition was raised, and the Charity Commissioners refused to sanction the sale. This decision was upset by a finding of the Court of Chancery that the only question was whether the offer was adequate and would benefit the charity. Eventually the ground was sold to the Peabody Trust, and in 1910 they resold it, at cost price, to the London County Council. The buildings have been in use for more than a year past as a very admirable furniture museum, the locality being the centre of the London furniture and cabinet-making industry.

The Ironmongers' Company devoted the proceeds to the purchase of a site of about fourteen acres at Eltham (or Mottingham), Kent, and the erection thereon of almshouses for forty inmates. Our illustrations of the central administration block and its imposing entrance gates in wrought iron will show that much was gained by the removal. In the front gable of the administration block there appear the arms of the Company. This building includes accommodation for the matron and nurses, a large general kitchen, offices, and a hall.

The architect was Mr. George Hubbard, F.S.A., V.-P.R.I.B.A., and the general contractor was Mr. W. Nash, of Deptford.

COMPETITION DESIGN FOR BOARD OF TRADE OFFICES, WHITEHALL.

IN the design illustrated the author, Mr. F. J. Horth, Licentiate R.I.B.A., aimed at obtaining direct sidelight to the corridors, and, by use of a central court, to provide good light to the inner rooms. The good character of the external treatment our readers can judge for themselves.

LYCH GATE, MOORTOWN CHURCH, NEAR LEEDS.

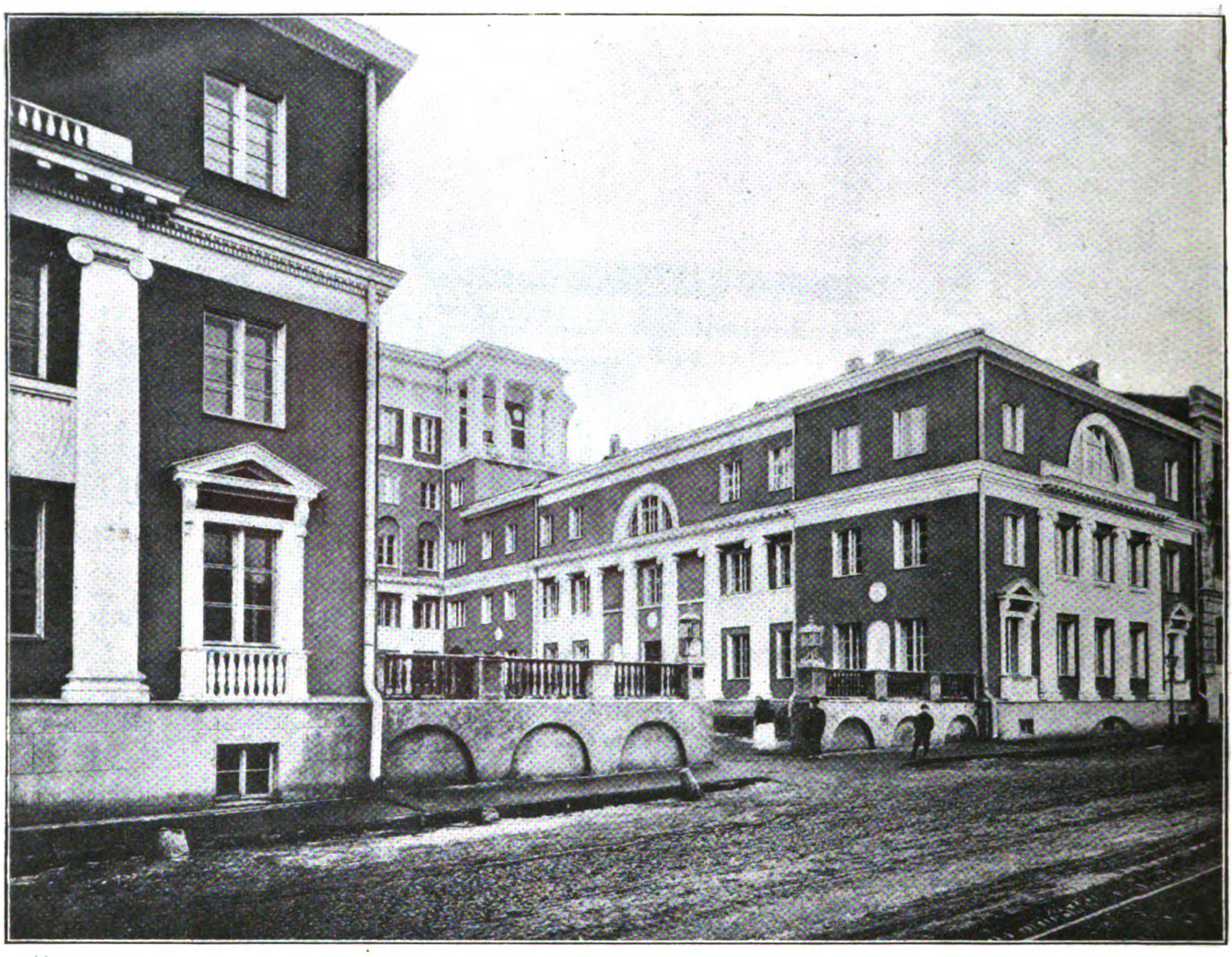
THIS lych gate, constructed of English oak and covered with oak shingles, was erected for the late Miss Booker, of Moortown, as a memorial to her relatives, from the designs of Mr. A. E. Kirk, F.R.I.B.A.

COMPETITION DESIGN FOR TOWN HALL, MIDDLETON, LANCASHIRE.

IN this competition over one hundred designs were examined by Mr. George Hastwell Grayson, M.A., F.R.I.B.A., in his capacity as assessor. That which we here illustrate was sent in by Mr. G. H. Willoughby, F.R.I.B.A., Manchester. Strict compliance with the particulars supplied, taken in conjunction with the "Answers to Questions," was strictly adhered to by the author, and the building lines shown on the block plan were not departed from. Direct intercommunication to all parts is obtained by right and left hand corridors, and the large central staircase facing the main entrance, together with subsidiary staircases to the assembly hall, &c., should be sufficient for every emergency. The several departments are so planned as to give priority of position and aspect to those of most importance, and at the same time enable persons frequenting the building to find any particular official quickly and easily. The Council Chamber and all committee-rooms are placed on the side and back—the former overlooking the Rectory grounds. By this arrangement these important rooms would be immune from all street noises. The height of the ground floor at main entrance—viz., 5 feet 6 inches above pavement—has been determined by the discrepancy in the levels from front to back of site. As planned this floor would be a clear 9 inches above the ground-level at the highest point of the latter, thus ensuring a dry structure and direct light to the basement rooms on front, with the avoidance of unsightly areas. As to the architectural character of the building, both externally and internally a monumental design of simplicity, dignity, and refinement was striven for, proportion, orderly distribution, and breadth of treatment being relied on for impressiveness rather than elaborate and florid detail. A little ornament is sparingly introduced as a secondary adjunct, not as a primary motive. The architecture throughout is subordinate to the practical requirements, and in no instance was convenience of plan sacrificed to improve the elevations.

CAERPHILLY Council are going to invite architects and builders to attend a conference with the Council to consider the question of town planning and the alteration of the by-laws.

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[From *Zodtchy*.

HOUSE OF PRINCE SHCHERBATOV, MOSCOW.—M. A. TAMANOV, Architect.

A GIFTED RUSSIAN ARCHITECT.

AMONG the brilliant group of young architects who have become so prominent in Russia since the beginning of this century owing to their enthusiastic propaganda of the pure and strict forms of the Classic tradition, one of the leading places is held by M. Alexander Tamanov, of whose work and achievement we find a sympathetic account in the Petrograd *Zodtchy*.

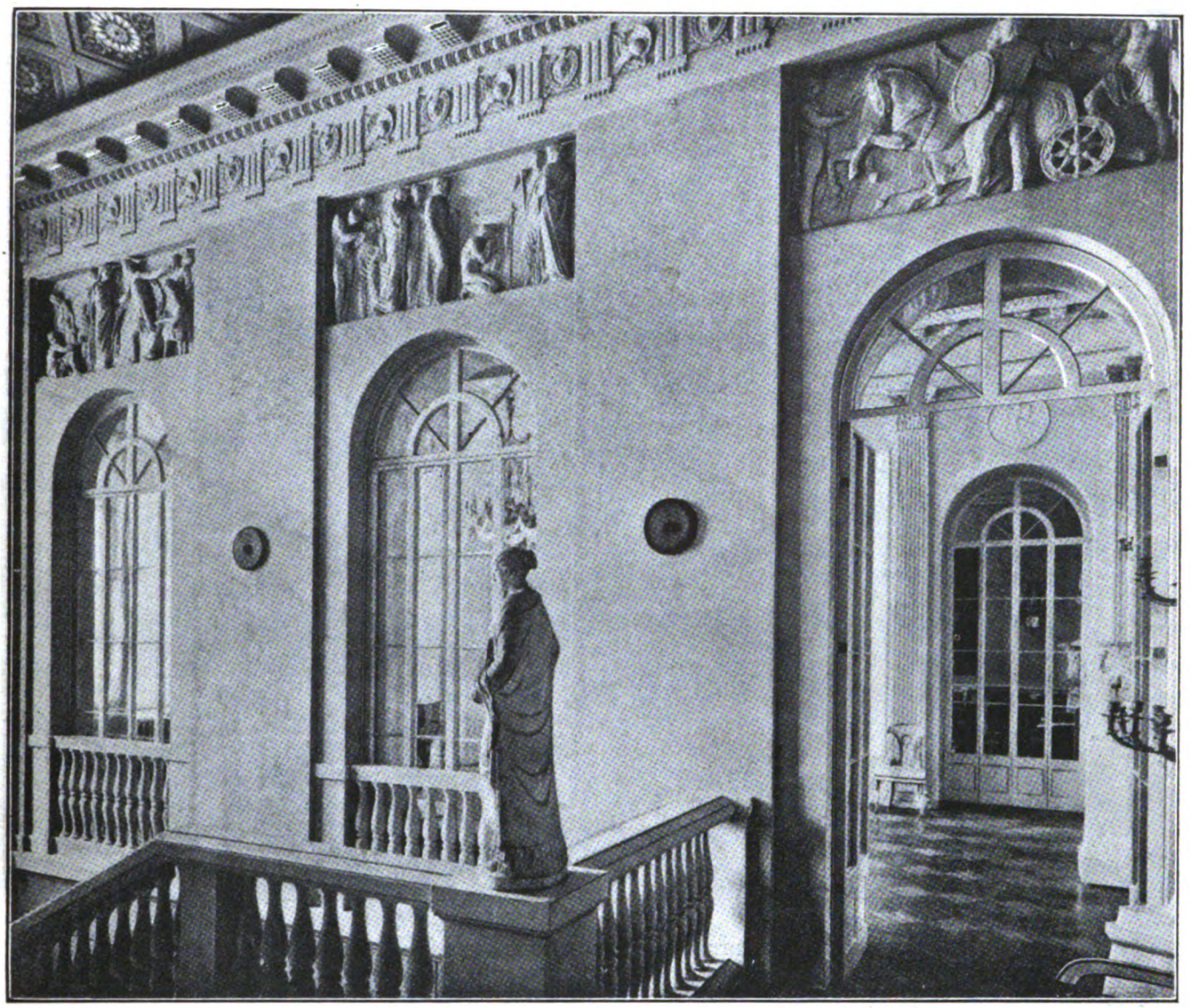
M. Tamanov received his artistic training in the Petrograd Academy of Arts, where he became thoroughly familiar with Classic architecture. At the time when M. Tamanov entered the path of independent work the architectural world of Russia had just begun to succumb to the wave of enthusiasm which was aroused by the sudden rehabilitation of the Classic style that had been predominant in the country a century back, more particularly of the Russian Empire style, so called, formed in the early part of the nineteenth century. Like most of his generation, M. Tamanov was swept by the general movement, which, in his case, received a further impetus from the commission he was given to restore the Græco-Armenian Church in Petrograd. The church was one of the best creations of Felten, the former principal of the Academy, who built it at the end of the eighteenth century. Time had its effect on the building, and two foundation pillars showed signs of failure. Numerous alterations and additions had also been made which were quite out of harmony with the original building and had to be removed. This task was carried out by M. Tamanov in a most masterly fashion. He measured up the whole of the building, removed the later constructions, rebuilt the portico, the vestibule, and the gallery, and remodelled the internal ornamentation. By these means the original appearance was restored to the fine old church.

A number of interesting designs and actually built houses followed during the next few years, and at the bi-centenary exhibition at Tsarskoye Syelo—the residence of the Russian Tsars near Petrograd—the expert knowledge of the Russian Classic style evinced by M. Tamanov's works received an official recognition in the commission he was given to design private apartments of various Tsars, from Peter the Great down to Nicolas II. Of his latest works Prince Shcherbatov's house in Moscow and the exhibition at Yaroslavle deserve special notice.

Prince Shcherbatov's house presents an original combination of residential flats with a private villa. It consists of a main building and two parallel wings, which are arranged in the form of the letter H. Twenty-eight flats containing from four to eight rooms each make up the income-producing portion of the building. The part occupied by the owner has thirty-nine rooms and two terraces. The flats are situated in the four lower storeys, whilst the fifth and sixth storeys are occupied by the owner's house, which has its reception rooms in the fifth storey along the main front of the central building, and the living rooms facing the back courts. The owner's part is provided with a separate entrance, from which an imposing vestibule leads to a grand staircase and lifts.

In the pavilions of the Yaroslavle Exhibition, which was held in 1913, we have another example of M. Tamanov's work, this time shaped in the style which is farthest removed from the Classic style of his other erections. The exhibition was organised by the Russian Government and the local self-governing public bodies, and had as its object a complete representation of the agricultural and industrial life of the district. It was designed by M. Tamanov as a mediæval fair in the market-place of some old Russian town. To impart greater unity to the whole the architect connected the numerous pavilions by means of covered passages, which joined them into a ring, the centre of which was occupied by the exhibits of larger size, such as boats, carriages, church bells, agricultural machines, houses, &c.

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[From *Zodtchy*.

DETAIL IN THE HOUSE OF PRINCE SHCHERBATOV, MOSCOW.—M. A. TAMANOV, Architect.

The construction of this exhibition, with its numerous buildings, all of which, in accordance with the character of the Russian style, showed a great variety of form and design, entailed a great amount of personal energy and required a very keen artistic feeling for, as well as expert knowledge of, the style chosen. In both these regards M. Tamanov proved himself more than equal to the task, and was able to produce an interesting example of the style which has so often been misused by architects less capable of appreciating its peculiar beauty.

TOWERS AND SPIRES IN SCOTLAND.*

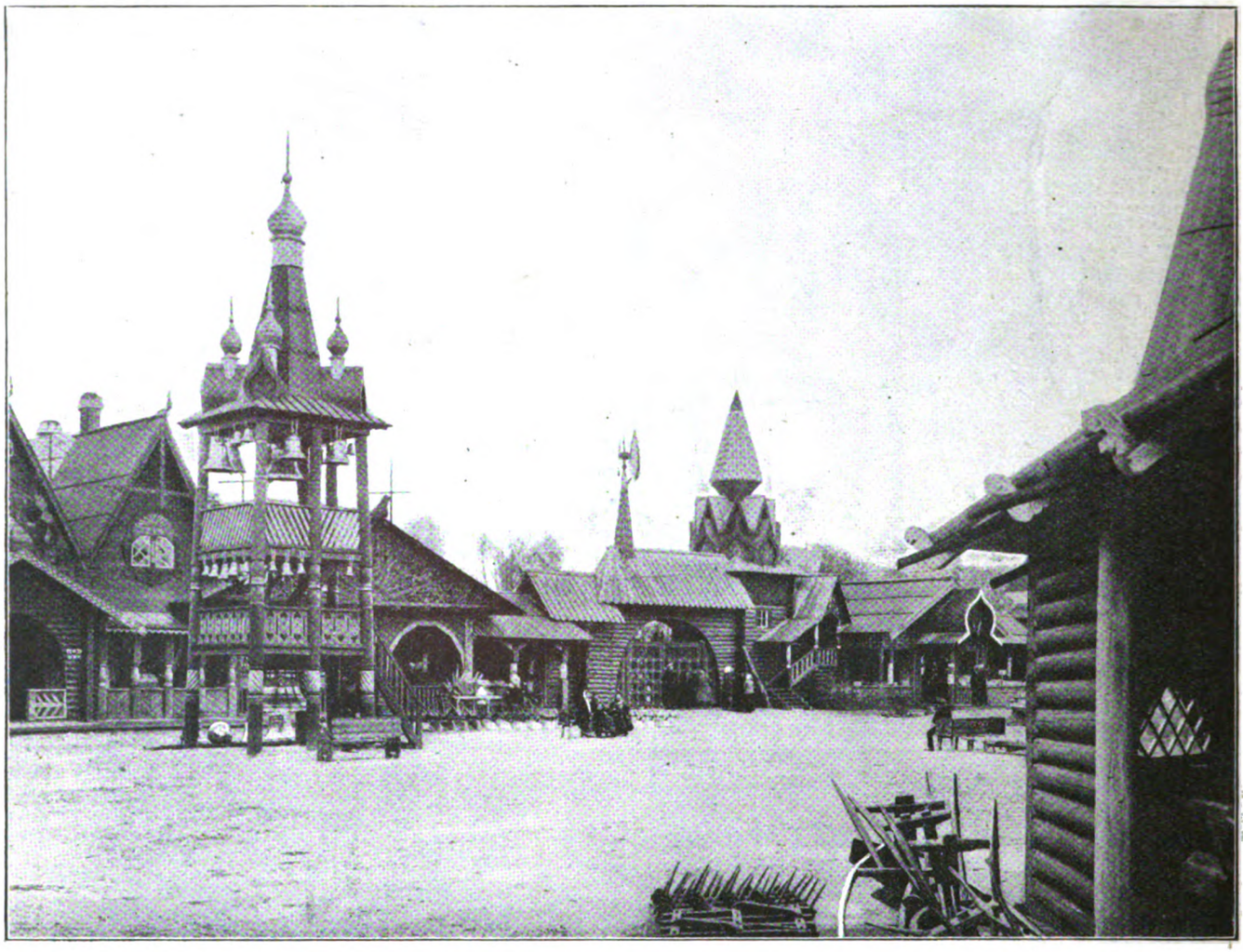
By REV. H. J. WOTHERSPOON, D.D., of St. Oswald's, Edinburgh.

WE have of late years built many churches in Scotland, but fewer towers. We have built for practical reasons—to overtake a swelling population with provision for its devotional needs, and we have been content, even grateful, if such provision has been attained. Of available resources there has seldom been much to spare after solving the problem of actual accommodation. Christian architecture is primarily an interior architecture, and we have been on true enough lines in considering first the interior of our new buildings. In that direction we have been on the whole not entirely unsuccessful. All things are comparative; and in comparison of the interior treatment of the more recent work with that of the generations immediately preceding, there is something for which to be glad. But our occupation has been with the strictly necessary—to get that done—and then, so far as might be, to do it in good ways.

Towers and spires are not among the necessities. As features of church architecture they do not appear at all for centuries after places of worship, specifically Christian, began to be built. Those of Ravenna are probably as early as any, and they may be of the middle part of the sixth century. The tower formed no part of the conception of the pagan or Jewish temple, or of the basilica which provided Christian architecture with its earliest model. It had been known only as a defensive feature; the Ravenna towers, like the Celtic round towers of four centuries later, had probably that character. It was the introduction of the bell, first perhaps as regulating the hours of monastic practice and then for more general summons to worship, which led to the building of towers for their reception. Mr. Bumpus names that at Mérida in Portugal as the earliest known example, and dates it about A.D. 560. Many great churches have no tower, and have desired none. Sta. Sophia itself owes its minarets to Mohammedanism, not to Christianity. Yet, being introduced, the tower speedily asserted itself for its value, both architecturally and in its appeal to natural emotion. The tower represents the building's claim to attention, to importance in life as standing for that which is socially central, which unites and combines men in a common devotion. It expresses, as nothing else can, the peace and strength of the Church in settled places and in times of

* Presidential Address delivered before the Scottish Ecclesiological Society, in whose Transactions it will in due course appear.

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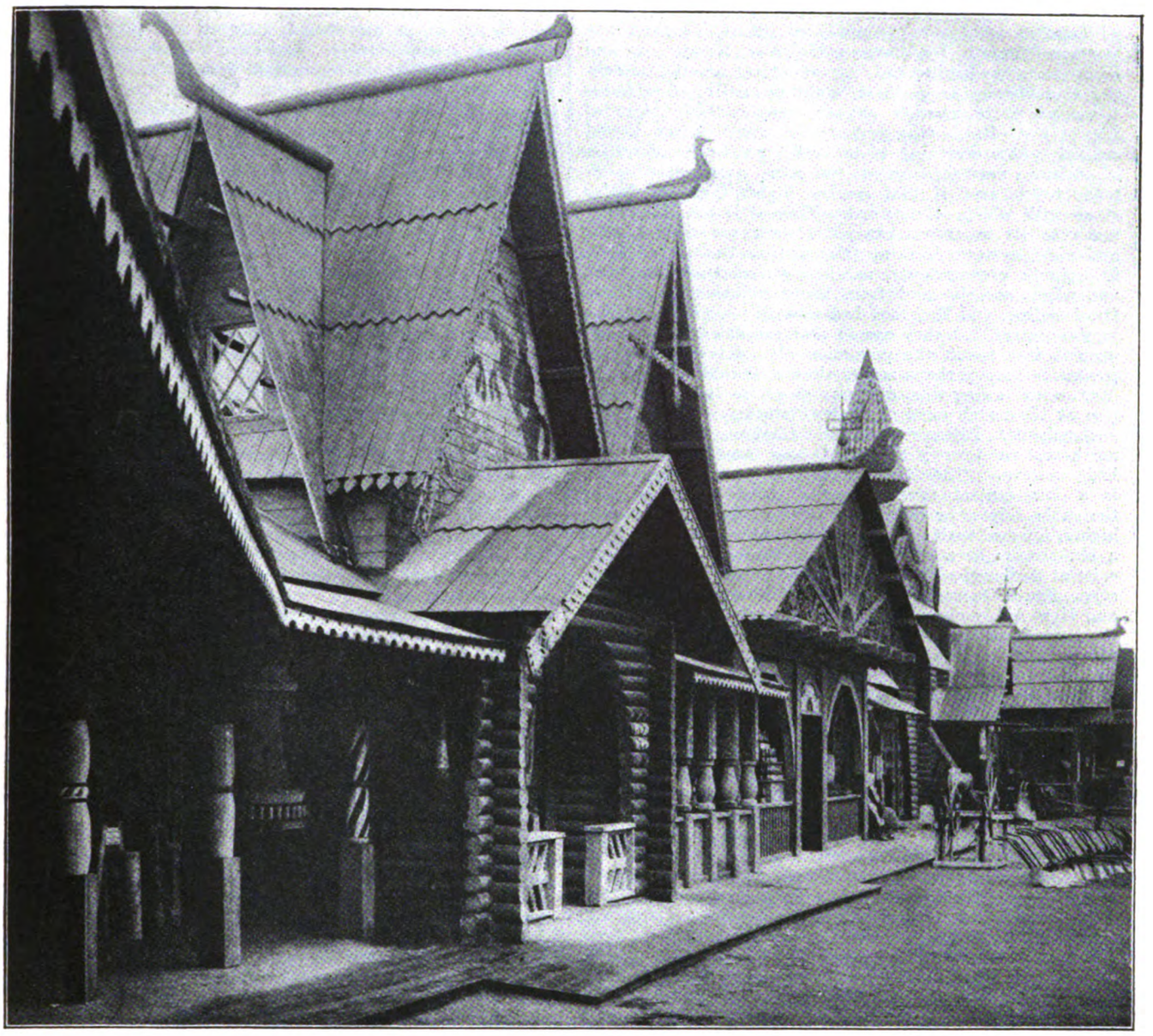
JUBILEE EXHIBITION AT YAROSLAVLE.—M. A. TAMANOV, Architect.

faith, as men are agreed to have Christ for Lord, and to dwell together under His blessed yoke, where the House of His praise is the focus of their common life, from which they go out to duty and to which they return to give thanks. Even in troublous times and where it is the weak minority, the Church must have its place of assembly, and may seek to make that interiorly beautiful, as the hidden chapels of the Catacombs were beautified in such fashion as was permitted by circumstance. The tower becomes possible only when men can rejoice openly in the Lord, and when the community is at one in His service. For the tower is, in the good sense, a boastful thing, boasting in that which is worthy of pride—the city in its freedom and strength, the Church in the readiness of all men to hear its call and to come to its benediction. Great towers may therefore be looked for—the municipal tower where city life has been proud and free, as in Italy or the Netherlands; the Church tower where religion has been the unifying force in national life, as in England, France, or Spain. Anywhere the tower can be expected only in times of peace and of some secular well-being; for after all it is somewhat of the superfluous, and expresses the builder's joy in life and confidence in his lot, and his sense that out of his abundance something is due to the ideal.

Such times, it must be confessed, have not been common in our history—and to speak of towers and spires in Scotland may suggest the difficulty of treating of the snakes of Ireland. Certainly we have not much in that sort; the most that can be said is that we have some things which in their measure are good, and possibly that they suggest a tradition which is capable of being carried farther. Scotland has never been rich in towers—not even in their ruins. Its time for building began late and soon ended; it had poor means and narrow opportunity. We can hardly realise the smallness of its population, how little of its surface was cultivated, how few and petty its towns, how trivial its commerce, throughout those Middle Ages when the great building work of other countries was done. The Wars of Independence cut short all possibility of large undertakings, and from the later years of the thirteenth century Scotland had little rest until the union of Crowns in the seventeenth. Our building period in its peaceful and natural development begins with David and ends with Alexander III., covering little more than 150 years; the marvel is that it produced so much. Finally, what Scotland had in the matter of church architecture, it for the most part lost in the wars which followed the English Reformation, in the disorders of our own Reformation, and in the neglect of subsequent generations. For what it had was mainly conventual; and of the conventual little indeed was conserved.

Of cathedrals, Fortrose and Lismore were but lowly buildings, and possessed no tower. Dornoch has been rebuilt. Dunblane was content with the tower of the earlier Norman church, originally proportioned, that is, to such a church as that of Muthill or Dunning, whose towers it so closely reproduces—later heightened by two stages to bring it into better relation with Bishop Clement's beautiful nave. Brechin and Dunkeld have north-western towers of no great importance—sufficient as belfries, and aiming to be little more. Whithorn Priory, which served as the Cathedral of Galloway, had a modest western tower, which fell only in the seventeenth century. Aberdeen, Elgin, and St. Andrews had central towers, which are fallen by sheer neglect to value or preserve them; that of Elgin endured to 1711. Aberdeen and Elgin had western towers as well. It is probable that all three of the central towers of these churches carried spires; Aberdeen certainly carried a wooden spire. Nothing remains of them except the lower stages of the western towers of Elgin, and the very honest and satisfactory western towers and spires of Aberdeen, which are happily intact in their bluff solidity. For those that are

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[From *Zodtchy*

JUBILEE EXHIBITION AT YAROSLAVLE.—M. A. TAMANOV, Architect.

gone it is useless to make lament. With Elgin and St. Andrews we have lost, if we ever possessed, what might have compared with the greater churches of the South. They are perished not by violence, as in our tardy shame we have sometimes pretended, but because we have not understood their significance nor cared for their splendour.

There remain to us of cathedral central towers only Kirkwall and Glasgow, neither of them of first rank, but both worthy of their position. It is impossible to judge that of Glasgow for its place, since it has been so unfortunately deprived of the support of its western adjuncts—the bell tower and the consistory house—which were removed in the middle of last century (1846 and 1848). The north-west bell tower, 150 feet in height and of much the same section as the great central tower, was a typical Scottish tower, closely resembling St. Salvator's; the tower-like consistory house which balanced it, though of less height and different profile, grouped with it well to carry the eye to the central spire—which, as Mr. Honeyman points out (*Glasgow Herald*, 1913), is the oldest in Scotland and has exerted strong influence on most later constructions of the sort. As it stands, the church has a certain deceptive air of completeness—as Messrs. MacGibbon and Ross* say, "a very homogeneous appearance," and that perhaps has helped Glasgow to forget that once its noble church bore a less "gaunt and stern aspect" than now. It cries out for reparation of the wrong that has been done it, and now that we have begun and in cases have been able successfully to restore our ancient fabrics, it is even wonderful that this restoration is not made, for the brave city of Glasgow has both the means and the spirit of the work, if its attention were turned to it. Kirkwall, on the other hand, has never had more than it possesses, and for some reason needs no more. Its tower is low and is proportioned rather to the first length of the building than to its later extension of choir and nave. Nevertheless, as it stands, it is singularly satisfactory, and one is glad to believe that no restoration is likely to affect its present relation to the charming outline of the structure.

Of cathedral towers then our tale is scanty. Passing to the abbeys and priories, these have been numerous, and their churches in many instances notable for size and magnificence, as one may reckon in relation to resource, for these could not draw as the cathedrals did upon the liberality of a diocese, and few of them were places of pilgrimage. In the matter of towers, however, a monastery is not a public institution in the sense in which a cathedral or parish church exists for the faithful at large—primarily, at least, its place of worship is the chapel of a society and needs no spire to proclaim its presence to the surrounding district; while its bells are rather for the ordering of its communal activity than to address a general call to worship. A certain modesty of external feature is in fact proper to it. Abbey churches have often great towers—those of Scotland

* *Ecclesiastical Architecture of Scotland*, 1897. This exhaustive work has made such a conspectus as this paper offers easy of compilation.

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have as a rule observed appropriate restraint and were content with such as might serve practical need. MacGibbon and Ross mention Arbroath, Dundrennan, Holyrood, Kilwinning, and Dunfermline as having had "great central towers." Writing at a distance from libraries and possibility of reference I am uncertain whether any of these carried spires of importance. Kelso may perhaps be added to the list of central towers deserving to be called great—the shortness of its nave must have given the more prominence to its noble tower, even if that rose no higher than the belfry stage with which it now ends. Culross is peculiar, inasmuch as its tower was central between an aisleless choir and aisleless nave, blocking the one from the other. It is in design a western tower, to which a second nave has been appended, and is solid from the foundation. Arbroath, Dunfermline, and Holyrood had western towers in addition to the central, but they are in that exceptional. Cambuskenneth is alone in the possession of a detached tower, a protective keep perhaps rather than a church tower in the usual sense, owing this, one may guess, to its unique position at the nodal point of Scottish strategy. Coldingham, Inchmahome, Pittenweem, and Lindores had each a north-western tower; Restennet and Anstruther Wester had western. The typical Scottish conventual tower is a low central tower, to rise, often only to clear the gable ridges, or carried at most a single belfry stage higher, finished with parapet and having within the parapet a blunt spire or a saddle-roofed structure. Such towers exist at Jedburgh, Pluscardine, New Abbey, Melrose, Inchcolme, South Queensferry, Iona,* and Rowdil. Pluscardine and New Abbey clear their gables by only a few feet—i.e., the tower is of only one stage from the wall plates. Rowdil alone suggests a third stage; the division of second and third stages is but slightly defined. It seems likely that others which have disappeared, as, for example, St. Mary's on the Rock at St. Andrews, may have been of the same type. Torphichen, the Chapel of a Military Order, is unique in the keeplike character of its central tower.

Of parish churches, let it be confessed that Scotland has few which can be compared with Ludlow or Shrewsbury or St. Mary Redcliffe, and for their towers has none to show against Ludlow or Boston or Coventry. St. Giles is St. Giles, but its tower is not its principal feature. Of St. Nicholas, Aberdeen, only enough remains to tell us what it has been; most unhappily its great tower must since 1876 be reckoned with things that were; scarcely less regretted that it has been not unworthily replaced. With these ranks Haddington, whose central tower is happily intact to the cornice. When—I will not say if—the restoration of this, by far our finest parish church outside of principal cities, is carried forward, we know in what fashion this part of it should be treated. The external corbels of its crown remain to indicate the membering, that it was eightfold, like that of St. Giles, not fourfold as that of King's College; and its replacement would give us back in completeness one of the most lovely towers of its size to be found anywhere.

In addition to these three, St. Monans is, I think, the only parish church earlier than the fifteenth century which has its tower on the crossing. In the middle of that century, however, the fashion of collegiating their chief parish churches prevailed among the Scottish nobles, with consequent rebuilding and extension. To this we owe a notable group designed, if not in all cases finished, with crossing tower, to which belong Perth, Dunglass, Seton, Whitekirk, Crichton, Biggar, and the now destroyed church of Dumbarton. Of these the towers of Biggar and Dumbarton are but to the roof ridge and a little more, and only Whitekirk and Perth rise to any predominance. Lauder (1673) is interesting as the last (before the modern revival of Gothic design) to be built for a central tower. It is completed in ordinary fashion to the ridge line and above carries an octagon belfry.

Western or other semi-engaged towers are simpler things, and more stable than those which are borne on crossing arches. *Prima facie* one might have thought to find these more numerous in a country which, like our own, has been of limited means, and where forces of destruction by violence or neglect have had exceptional scope. As a matter of fact, however, our ancient parish towers, even of this type, are few. Those which remain in association with worship can be carried somewhat beyond the bare score only by a charity which includes, for example, Anstruther Easter or Gifford, which are scarcely ancient, and perhaps some which are scarcely towers. There are besides some eight or nine which subsist in connection with ruinous structures which have been let go to ruin. There is first the early group of towers in the midland of Scotland—Muthill (ruined), Dunning, and Markinch; and following these in date Monymusk, Rutherglen, Kirkliston, Lasswade, the partly rebuilt tower of Duddingstone, the unfinished tower of Uphall, and Stobo which seems to be a parish peel rather than a church tower proper. Among western towers of the later Gothic that of the grouped churches of Dundee stands easily first, and indeed nothing of the sort comparable to it remains to us. There are besides those of Holy Trinity (St. Andrews), Stirling, Linlithgow, Inverkeithing, Dalkeith, Crail, Tullibardine (St. Vigeans), Corstorphine, Kilwinning, Cupar, Greenlaw, Tron (Glasgow), perhaps Polwarth; finally, Anstruther Easter of the middle seventeenth century, and, if you like, Gifford of the eighteenth; and of ruinous buildings, Castle Semple, Dysart, and the Cross Church of Peebles, which is only a fragment. These are all.

Of ancient University towers only two remain—St. Salvator's and King's College. Both are notable—that of King's for its crown canopy, which, with St. Giles, sufficiently indicates the suitability of this termination for towers of modest projection and low surrounding; and that of St. Salvator's as one of our few towers which attempt to soar, and also for a certain fine simplicity and adequacy.

In this enumeration (which I am afraid is only too complete) I have omitted reference to one tower which scarcely falls into any of the classes mentioned, but is important in the architectural history of the country—I mean that of St. Rule's at St. Andrews. Properly it might fall to be named among cathedral towers, if it is indeed, as seems likely, the surviving fragment of Bishop Robert's basilica; only that when one speaks of St. Andrews Cathedral one thinks of its later and more stately neighbour. Architecturally it groups with Markinch, and then with Restennet, with the ancient portion of Dunblane tower, and with Muthill and Dunning—which, however, differ from it in feeling, owing to the recess of their successive stages and to their saddle terminations, which go to group them in so far with towers which taper; while æsthetically St. Rule's belongs to the type which depends for effect on foursquare solidity to the summit. Markinch is on a smaller scale, and is divided by string-courses, while St. Rule rises without break to its belfry stage, and to some eyes gains immensely thereby. It is not clear to everyone that effect of height is increased by horizontal subdivision. I believe that it is considered unwise in a lady of less than moderate stature to dress in a conspicuously barred fabric; and towers as well may be thought to lose in stature by multiplication of transverse lines. The Angel tower at Canterbury, for example, seems to carry us upwards along with its unbroken turrets. In the case of St. Rule's I do not know how else than by this linear simplicity to account for its impressiveness, for it is a small thing of only 110 feet, and it stands contrasted with a gable which almost rivals it in altitude—and by suggestion, being only a gable, should dominate it. Yet St. Rule's loses nothing by the association.

The beauty and satisfactoriness of this tower must have appealed at least as strongly to the keenly sympathetic mind of mediæval builders. The fact that it keeps its place upon the Chapter Seals of the latter and more splendid cathedral to the end of the series speaks to their feeling for it. For a century and a half at least it stood without rival in Kilrymont rock, and came under the eye of Churchmen from all parts of the country. I have often thought to trace to it that preference for the simple square tower which runs through our Scottish work. Up to the period at which St. Rule's supplied an example to our builders, this type of tower, "tall, slender, unbuttressed, with mid-wall shafts on the belfry stage, with its ornament, if it has any, confined to flat pilasters and arcades" (Bumpus, "Cathedrals and Churches of North Italy," p. 65) is usual over a great part of Europe as at Chartres, Nîmes, and Arles in France, Valladolid, Salamanca, and Astorga in Spain; in Germany it is the characteristic tower of the noble Romanesque which preceded the less successful pointed work of that country; while in Italy the form so contents artistic feeling that it survived, and survives, to exclude almost every other. In Western Europe from the eleventh century onwards the tendency was to depart from its rigidly pris-

* I class Iona structurally with conventual buildings, although later it obtained rank as a Cathedral. In the same way St. Giles (Edinburgh) is considered among parish churches.

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matic section and from its determination to be essentially a tower pure and simple; to complicate its plan with turrets associated from the foundation upwards, or with stepped buttresses which from their beginning suggested the effect of graduated taper and demanded prolongation of line into an acute spire; further, to enrich it with panelling and niche and superimposed lights; to prepare its transition to spire with pinnacles and turret spirelets; and generally to harmonise its lines with the sharpened arches, high-pitched gables, and converging curves of the pointed style, and with the sense of balanced opposition of lean and thrust which that style conveys, all of which are features of building with which the true tower—tower rather than spire—prefers to contrast.

For one may recognise a difference: all of these elevated appendages, tower or spire, fall æsthetically into one or other of two classes: there is the tower proper, which rises directly, preserving its mass and original section as long as it can, to terminate more or less abruptly in some cornice or with comparatively blunt roofing (of broach, or saddle, or lantern); and there is the spire proper, to which its tower serves mainly as foundation, necessary to let it start from above the roof-line of its building, the tower from the first expecting the spire, requiring it, and preparing itself to melt into its leap heavenward. Not that the division is capable of being made rigid. At one end of the scale there are towers pure and simple, such as the campanile of St. Mark's and (magna componere parvis) St. Rule's in Fife or the central tower of Durham; the Giralda of Seville, or the lovely octagon of Valencia; the towers of St. Mary Cosmedin and so many others at Rome, and so on; while at the other end of the scale there are spires which practically start as spires from the ground-line, like the west towers of Burgos, or those in which the needle of the spire is so protracted that it is everything and the tower for effect nothing, as at Ross-on-Wye. But between these extremes there is a complete gradation. There are examples in which tower and spire are combined in perfect sympathy and balance, as at Salisbury, and Lichfield, and Coventry, and almost as successfully at Norwich; there are towers proper to which a spire has uncomfortably adhered, as at Wakefield; and towers which, like Ripon and Ely, demand some spire and have none; and there are numberless spires which exist only as towers, because they are cut short before completion. There are those Spanish towers of gradually recessed stages and highly developed lantern termination, like Toledo or Santiago, of which one does not know whether to think as more tower or more spire; while England stands alone in her group of lovely towers which have no spire and yet give an effect of spire rather than of tower proper from the riches of their termination in a grove of spirelets—of which Canterbury is the pre-eminent example.

On the whole, however, one may venture to say that a tower is a tower and a spire is a spire, and that there is a difference of sentiment and conception between the two; also that of the two it is rather the tower which has received the Scottish preference. Of ancient work we have scarcely any great spire surviving—there is Glasgow; but, while adequate, it is, as a spire, scarcely great (220 feet). The difficulty of classifying is that almost all of our towers which carry structural spires are so closely of one character—they are simple square prisms with plain belfry stage, parapet, and broach. The only difference is that in some the broach is more pronounced than in others. In but a few the broach is sufficiently projected to give to the whole the character of spire rather than of tower (in the sense in which I have attempted, in the face of technicality, to distinguish between these two). Glasgow is clearly a spire; there is Restennet, a spire added to a tower; there are the western spires of Aberdeen; possibly Brechin, St. Monans, and Seton, which, like Restennet, has been somewhat abruptly completed with a broach unfenced by any parapet. The majority are rather towers which carry a distinctly subordinate broach—as Dunblane, St. Salvator's, and Holy Trinity at St. Andrews; Rowdil, Corstorphine (unique in having pinnacles instead of parapet), Crail, Pittenweem and Anstruther Wester. St. John's, Perth, has elevation enough to present itself as clearly a spire, but the spire is of wood; I am not certain of its age, but it harmonises so well with tower and church that one would believe it at least to follow the original design. The massive square broaches of Kirkwall and of Whitekirk as it was are also wooden, and for their place could hardly be improved.

Scottish architecture has thus tended to neglect the spire and has emphasised the tower. Where it has, as at Glasgow or Aberdeen, permitted to the spire some prominence, it has still refused to let its tower be modified by any forethought for it in the way of buttress or turret; the solitary stair turret which here and there occurs exists strictly for its purpose of stair. There is no thought anywhere of blending tower into spire or of softening the transition from one to the other by a confusion of pinnacles. Here is the tower with its parapet, and here is the spire built frankly upon it; there is no mistaking which is which—the tower is not less a tower because it happens to terminate in something more or less pointed. It may end abruptly with mere parapet, as Culross, Cambuskenneth, Dunkeld, Stirling; as in their present state St. Rule's, and many others do, which formerly may have carried some further roofing. The Chapter seals show St. Rule's, for example, finished with an abrupt broach of uncompromising square section which cannot have added much to its beauty; and Mr. MacGregor Chalmers has, I think, restored Iona with that cottage-shaped stone structure which is so frequent as the roof of domestic towers of defence, and is used with happy effect in the church towers of Pluscardine, Dundee, Sweetheart, and Crichton, and no doubt has existed in others which have now lost their original summit. There is besides a small but interesting series of saddle or gable terminations, which includes the very early Norman towers of Dunning, Muthill (and probably Dunblane in its first form), with Stobo, Lasswade, Stenton, Torphichen, and also with Uphall and Kirkliston (where this form of roof has been used to close towers which appear to have been stopped before reaching the height for which they were intended). And, finally, there are one or two which are capped with a convergence of open arches imitating the construction of flying buttresses, which results in a crown-like canopy: St. Giles and King's College retain this; Haddington and Linlithgow have lost it. But even St. Giles, rich and prominent as its beautiful crown may be, remains essentially tower, not spire.

In our Scottish building, then, we may note a preference for the tower idea over the idea of the spire; and in towers we may note a persistence throughout of the earliest type adopted—the simple square plan, continued from foundation to parapet with undisguised angles: we note the absence of turret or buttress, unless for strictly constructional purpose, with the general absence of niche, pinnacle or finial, with the belfry openings generally lancet or untraceried: * the sheer wall as little broken as may be by panel or arcading or successive ranges of light, and only occasionally permitting so much as a string-course; the direct termination almost always in a parapet with or without some flèche or broach or low-gabled roof within the parapet. For both central and semi-engaged towers this type is adhered to from the primitive example of St. Rule's, in which the series begins, down to the late but still meritorious Fifeshire examples of the sixteenth and seventeenth centuries. Poverty of purse or limitation of artistic resource may have contributed to this result. When, however, one sees, as at Haddington or Dundee, how the type could be played with and enriched and yet could be preserved, one is inclined to believe in a national preference, and almost encouraged to speak, as Mr. Honeyman has spoken, of a national style—a style which I am Scot enough to find extremely suitable and satisfactory.

The very great majority of our ancient towers follow this. Excluding the three round towers of Abernethy, Brechin, Egilshay, and the anomalous little tower at Cockburnspath, which hardly come into the series, I find that MacGibbon and Ross, who have omitted little indeed, if anything, that can be noted, figure in all something like sixty-nine towers, and that of these, fifty-eight (thirty-eight western or semi-engaged and twenty that are central) are of this form or plan, one or two, as Stirling, being rectangular and not absolutely square. Of these only six (Greenlaw, Culross, Holy Trinity (St. Andrews), Crail, and Pittenweem, and one central tower, Seton) permit even the slight complication of a stair turret. The delicate angle shafts of Holyrood and Melrose can hardly be held to compromise

* Tracery in belfry openings occurs at Holyrood, Brechin, Cambuskenneth, Inverkeithing, and a simple plate tracery at Inchcolme. Iona has unique square-headed openings framing a continuous network of quatrefoils. Dundee has round arched lights, which are also continuously filled with such tracery, but they are not in the belfry.

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their fidelity to type. Kelso, Pluscardine, and Kirkliston have no buttress, but the Norman angle pilaster; and otherwise there are only eight—Brechin, Cambuskenneth, Inverkeithing, Dunkeld, St. Machar's, Dundee, King's College, and the now vanished west tower of St. Mungo's—which are at all buttressed; and of these the buttresses of Glasgow, Inverkeithing, St. Machar's, and Dundee are severely stopped as soon as they have done their constructional work; those of Dundee are limited to the first stage and leave the prism of the tower to rise unbroken for the rest of its way. Only four towers—Brechin, Cambuskenneth, Dunkeld, and King's College—show tolerance of the buttress and possible pleasure in it. One can hardly but agree with Ruskin that a tower which does not need buttressing is better than a tower which does; our fathers certainly seem to have been of that opinion.

It would carry us beyond possible time if I were to allow myself to speak of more recent work, often so excellent; such as, for example, has adorned Aberdeen with the new St. Nicholas tower and that of Marischal College (and I should like to note also the brick tower which rises from the valley below St. Nicholas, and has striking merit), or which has adorned Edinburgh with the stately spire of St. Mary's Cathedral Church, now so happily supported by its western sister, and the fine Pugin spire on the Castle ridge. The list would be long if one attempted to make it complete. I have thought only to run over in a superficial way what remains to us of the period of native and articulated development in search of what may suggest the characteristic, and that unconscious choice of form which goes with racial temperament and natural environment. If on the review I were to attempt to name a tower which for myself embodies type, it would (perhaps more from association and affection than on any better ground) be that of my old college of St. Salvator. I should probably find our most beautiful towers at St. Rule's, Kelso, Haddington, Pluscardine, Holyrood, and Dundee. I should think of Dunning, Stenton, or Lasswade as suggesting an admirable type of country or village tower. I should wish that the effect of Whitekirk or Seton (or now Craiglockhart), the spire gleaming out of foliage, were more frequent in our landscape; woodland gives a wonderful value to the solitary spire, suggesting as it does the bond of common faith unifying a scattered population. I should regret that in Scotland we so seldom meet the effect of grouped towers; an extraordinary enhancement accrues to towers from mere association together, speaking, as that does, of the complexity and compactness of city life. Aberdeen, as one approaches it from the sea or from the Dee valley, shows something of this, and St. Andrews had it before its domestic buildings grew to their present altitude, and Brechin is perhaps a third example. There is one point of view here in Edinburgh along the Nor' Loch Valley which brings together the towers of St. Cuthbert's, St. John's, Free St. George's, and St. Mary's spires—one has wished that such a collocation occurred rather on the height of old Edinburgh—we should then have had a sky line to rival anything in Spain, the land of notable city sky lines. I should also reflect upon the remarkable series of towers which we find in Fife, ranging from St. Rule's of the eleventh or twelfth century to Anstruther Wester of the seventeenth, and including also Markinch, St. Salvator's, Holy Trinity (St. Andrews), Crail, Dysart, Kilrenny, Cupar, and Pittenweem—a series which preserves throughout its individuality of type, and in no instance fails of a certain modest adequacy to position. I should perhaps venture to speculate whether we had not in this type something which in measure of its persistence we have made our own and might consistently preserve and develop. It is a type which has its own nobility; it is extremely adaptable to position and to resource—it groups well with other towers of whatever class, and has at the same time a peculiar capacity for solitude—and it has the merit of æsthetic safety—bad towers of this outline are rare—and it has value for height, such as spires do not always attain.

These, however, are only the reflections of a prejudiced Scot, who for the sake of one or two grey and worn piles of stone along our eastern coast is ready to love a square tower wherever he finds it; and they represent nothing besides that individual liking; as to which there is proverbially no disputing, and which therefore claims for itself nothing. I am afraid that the subject is one which for long can have only academic interest. Still less in the near future than in the past can we have to spare for the merely beautiful. Yet the time may come—days of peace and of resilient impulse. St. Andrews Cathedral was completed and dedicated as a thankoffering for victory; it may be that God prepares the like for us.

THE SURVEYORS' INSTITUTION.

THE annual general meeting of the Surveyors' Institution was held on Monday, May 31. According to their forty-seventh annual report for the first time in the history of the Institution the Council have to report a reduction in the number of members, the total in May 1915 being 5,385 compared with 5,482 twelve months ago, due to a diminution of 107 in the number of professional associates, and 35 in the number of students. Doubtless the war has had some effect in contributing to this result, but it was anticipated in the Council report of last year, when it was pointed out that the exceptional increase in numbers which had taken place during the previous two years was caused by the desire of intending professional associates to enter prior to the closing of the doors to those who had not passed the final as well as the intermediate examination. The supply has now been shut off, and will not again become normal until a considerable accumulation of men who have passed the intermediate exists, from which the final examination and the balloting list may be recruited.

In order to enable candidates, who have passed the intermediate examination but under the new rule cannot yet come up for election as professional associates, to retain a connection with the Institution, a class of probationers, in which they are eligible for enrolment, has been established by the Council. Probationers, who now number 49, are allowed the use of the Institution buildings, Library, Loan Library, and Museums, and receive the Institution notices and transactions.

The receipts for the year 1914 reflect the reduction in the membership, and a similar result is noticeable in connection with the entrance fees received on capital account, the amount under this head being £170 in respect of 54 elected candidates in 1914, compared with £1,560 for 495 in the previous year. There is also a heavy and natural decrease in the receipts on the examination account, due to so many of those who would in normal times have presented themselves as candidates having joined the national Forces. The total received under this head was £2,051, compared with £4,034 in 1913.

In connection with the war the Council voted 500 guineas to the Prince of Wales' National Relief Fund, and £50 to the funds of the Professional Classes War Relief Council.

Certain examination changes have been adopted in the syllabus of existing subjects and certain new subjects introduced, the changes to come into operation for the 1916 examinations. For example, Euclid has been dropped as a definite subject from the preliminary examination, and included under the more comprehensive heading Geometry; and the syllabus of Forestry and that of Land Drainage have each been brought up to date. The additional subjects are "The Principles of Valuation and Use of Valuation Tables," which will now appear in Sub-Divisions I. and III. of the Final Examination; and "Heating and Ventilation," which will be taken by candidates in Sub-Division III. of the Intermediate Examination. Room has been made for these by including Agricultural Chemistry in the Intermediate Examination of Sub-Division I. only, and by omitting the afternoon paper in the non-typical Constructive and Working Drawings or Quantities, as the case might be, in the Intermediate and Final of Sub-Division III.

The question has naturally arisen whether the Council should not take some steps to meet the case, so far as possible, of candidates for the Institution Examinations who have joined the naval or military Forces, and who have thereby been placed at a disadvantage through the interruption of their studies. Concessions which will remain in force long enough to enable candidates to obtain a year's training after the conclusion of their military service have been made by the Council to meet these cases.

As was to be anticipated, the number of candidates presenting themselves for examination showed a great reduction, from 1,095 in 1913 to 526 in the current year; the war, and the fact that the staff of the Valuation Department seemed likely to be reduced rather than increased, being the main contributing causes. Twenty-seven candidates came up for re-examination in their Typical Subject, and of these, five, all in Sub-Division II., again failed to satisfy the examiners.

Table D gives the statistics of Examinations since they

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were instituted in 1881, showing the percentage of successful candidates. The Council regret to have to report the existence of a general consensus of opinion among the examiners that candidates during the last few years, and particularly at the recent Examination, have presented themselves without proper preparation. The standard of the Examination has not been altered, and the percentage of passes therefore, particularly in the case of Scottish candidates, bears out this opinion. It is possible that the excitement and unrest due to the war may this year have had a deleterious effect upon the studies of candidates, but this explanation could not apply to the Examinations of 1913 and 1914. The Council would strongly urge candidates to look upon the Examinations not merely as a step towards membership of the Institution, but also an as important part of the foundation upon which their future professional knowledge will be based. They are, therefore, worthy of a careful course of study, and methods of "cramming" should be avoided.

Taking advantage of the new rule which provides for a Special Diploma Examination to be held in any year in which not less than eight candidates have previously intimated their intention of sitting, ten candidates offered themselves for the Sanitary Science Examination, of whom three proved successful and obtained the diploma. The test is a severe one, but the value of the diploma is becoming increasingly recognised.

The changes in the conditions governing the Institution Scholarships, which were foreshadowed in last year's report, have now come into operation. The Scholarships are no longer allocated to certain Universities, but successful candidates are permitted to select the University at which they will hold their Scholarships. The Competitive Examination is undertaken by the Oxford and Cambridge Joint Examination Board, and the choice of subjects has been extended so as not to exclude candidates who have been on the classical side of their schools. This examination is now held about the end of January in each year, in order to enable successful candidates to matriculate at their selected Universities prior to the commencement of the scholastic year.

The Competitive Examination, which was first held under the new conditions in January last, was naturally affected by the war, only five candidates presenting themselves. Two of these, Mr. A. D. Merriman and Mr. W. B. Owens, reached the requisite standard, and have selected Manchester University and Trinity College, Dublin, respectively, at which to hold their scholarships. But neither of the successful candidates has as yet definitely decided whether to enter upon his scholarship at the usual time, or to ask the Council to allow it to be deferred, in case he enters military service, until his return to civil life.

The alterations to the Forestry Museum having been completed last year, it was hoped that several exhibits of special interest might be installed during the period covered by this report, but the war has naturally prejudiced their collection and delivery. It is hoped, however, to include as far as practicable examples showing the uses to which the various timbers are put, and to illustrate the industries connected with the manufacture and commercial utilisation of native timber. A complete exhibit of building timbers has been mounted, to which labels are attached giving the botanical or popular name of the tree, and the trade term for the timber. This should be of value to architects and building surveyors, and should throw a needful light on the confusing trade terms in general use. It should also appeal to land agents and foresters, as affording a comparison between the native and foreign timber obtained from the same species.

The Sanitary Science Section, which is formed of the holders of the Institution Diploma in that subject, did some valuable work in connection with the Local Government Board draft Building By-laws, carefully studying them in detail and making well-considered suggestions for their amendment. These suggestions were placed before the Department by the Council, with the result that Mr. H. Freyberg, the Chairman of the Section, was asked to give evidence before the Departmental Committee on Building By-laws. The Hon. Edward Strutt and Mr. Arthur Vernon were also asked to represent the Council before that Committee from the rural and urban point of view respectively.

The authorised scale of fees will shortly be issued in a slightly amended form. It is not thought that this scale will be applicable in all cases, but the Council feel convinced that it will prove of value by affording an official indication of the fees which are looked upon as proper for different classes of work, and will therefore do something to keep up the standard of professional remuneration in the face of the unfair and unreasonable demands which are now so often made by persons ignorant of the circumstances.

The Council have given very careful consideration during the Session to the question of the undue taxation of fees, by which professional work coming under the review of the taxing master is often rendered unremunerative. It is hoped that the publication of a scale of fees by a recognised body such as the Institution may have some effect in this matter, but members are strongly urged, when undertaking work liable to taxation to make it clear that they will expect to be remunerated in accordance with the proper scale.

The whole Session covered by this report has naturally been coloured by the great war in which our country is engaged, and it is pleasing to the Council to be able to report that the profession of surveyors has not been behind others in recognising its responsibility in the crisis. At the time of writing, 1,063 men connected with the Institution are serving with his Majesty's Forces, their numbers comprising 124 Fellows, 611 Professional Associates, five Associates, nine Colonial Fellows, 144 Students, and 170 Examination Candidates and Past-Students. Four members of the Institution staff are also serving.

The resources of the Institution have been at the service of the War Office and Admiralty in finding experienced and qualified building and quantity surveyors for work in France and at home in connection with the large amount of temporary buildings which have had to be erected for hospital and store purposes, and for housing the newly enrolled troops during the winter. They have also been in close touch with the War Office on the subject of land and property taken for military purposes, and the assessment of dilapidations in connection with billeting.

A committee was set up by the English Forestry Association for the purpose of organising the supplies of English grown timber for building and other purposes during the war. The Institution was represented by the President, Mr. Percivall Currey, Mr. M. C. Duchesne, and Mr. Dendy Watney.

The Scottish Committee brought to the notice of the Council the proposed regulations for entering into and carrying out contracts for building work in Scotland, which had been drafted by the advisers of the Board of Trade with the object of settling the unfortunate disputes which had practically brought the building trade in that country to a standstill during 1914. The Scottish Committee drew attention to certain proposals contained in the draft which were open to objection, and the Council have placed their views before the Board of Trade. It is hoped that with a return to normal conditions the difficulties which existed prior to the war may be mutually settled.

In accordance with the provisions of Section 23 (4) of the London County Council (General Powers) Act, 1909, the draft regulations proposed by the County Council in connection with the construction of buildings in reinforced concrete have again been considered by the Council, who made a number of suggestions thereon to the Local Government Board and the County Council. The Council were pleased to note that a redraft of the regulations, which has recently been laid before them, shows that due weight was attached to their recommendations; and they are glad to be able to report that there is reason to hope that substantial agreement may shortly be reached in this important matter. The Council wish to acknowledge the careful calculations which Mr. P. J. Waldram (Fellow) was good enough to make for the information of the Building Committee in connection with the proposed regulations.

The London County Council (General Powers) Bill, 1914-15, was discussed in detail by the Council, particularly Part III., dealing with the drainage of premises, and Part IV., affecting buildings on low-lying land. The powers sought therein seemed likely to affect prejudicially the development of land and erection of buildings, and the Council, therefore, felt compelled to petition against the Bill. They are pleased to be able to report that the promoters decided to strike out Parts III. and IV., to which exception was taken, at the Committee stage of the Bill.

The Council have also discussed with representatives of London University proposals which have been put forward in some quarters for the establishment of a School of Surveying in connection with the University; and with representatives of the Institution of Municipal and County Engineers, the possibility of something being done, by co-operation between surveyors to public bodies and those who act for private clients, to expedite town-planning schemes, and thus

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to reduce to a minimum the period of stagnation in development, which so often exists between the commencement and completion of a scheme. In neither of these matters has a definite result been reached, but the Council have reason to anticipate good effects from this ventilation.

From time to time cases of infringement of professional etiquette, or actual breaches of professional conduct, are brought before the Council to be adjudicated upon. A careful elucidation of the facts follows, and if the complaint is substantiated the Council take such action as they consider necessary to prevent a recurrence of the fault. It would appear that this side of the Council's activity is not known or appreciated by all members, and it has therefore been decided to issue at the end of each session a concise report, giving the main facts of the cases which have been dealt with by the Council during the session under this head.

SCHOORE.

By JOHN A. RANDOLPH.

FROM the flooded district of West Flanders comes the news in a Belgian official communiqué that the German artillery on May 26 bombarded the Belgian advance posts and the village of Oostkerd, according to the telegram in the papers, apparently meaning Oostkerk, just west of Dixmude.

A wretched little construction at the east end of the choir aisle serves to spoil the picture. It is to be feared that the German artillery will not leave this interesting example of a West Flanders village church unscathed.

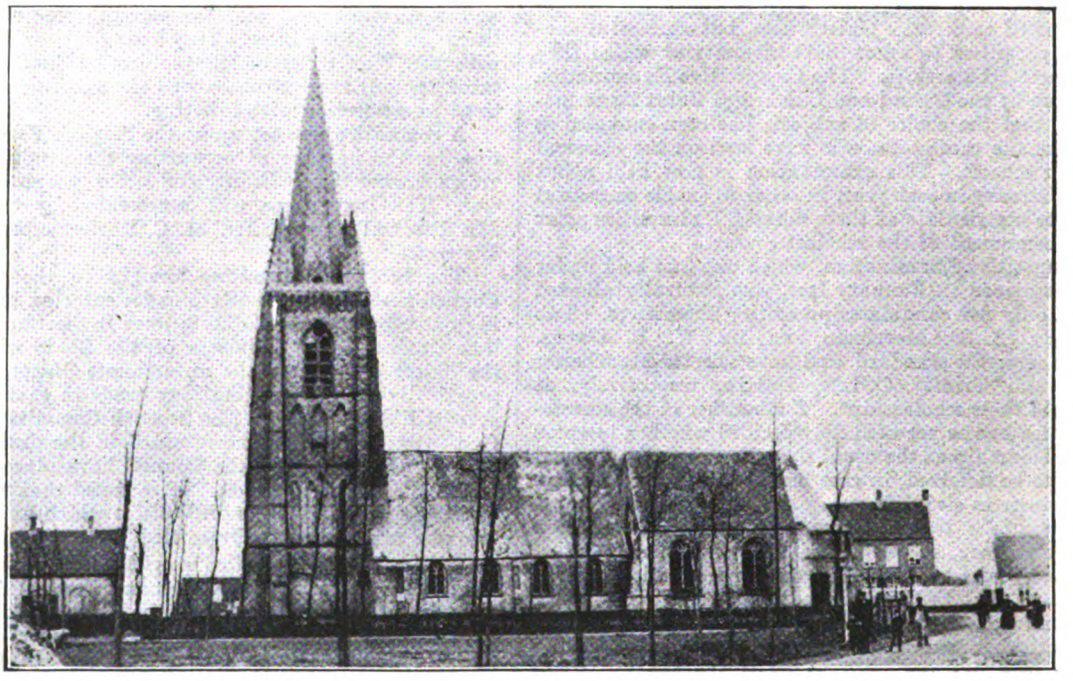
The houses of the village are of the usual type so familiar to those who have roamed about Flanders and North Belgium—unpretentious, but homes nevertheless.

THE SHOW CITIES OF BELGIUM.

A MELANCHOLY interest attaches to the description of the beautiful cities of Belgium by Mr. Eustace Reynolds-Ball, F.R.G.S., in the June number of *Khaki*. He writes:

The present juncture, when the whole of Belgian soil is overrun by foreign despoilers, and when many of its famous towns, with their noble guildhalls and churches, serve only as monstrous examples of the unpardonable vandalism of a barbarous enemy, gives a melancholy interest to this descriptive sketch of the artistic and architectural glories of old Flanders.

Belgium, really one of the most attractive touring-grounds, is not understood by most tourists, too apt to regard the country as rather commonplace compared with Switzerland or Italy. Yet Bruges, or Antwerp, or Ghent hardly yield to Venice or Florence in artistic and historic interest.



THE CHURCH.—SCHOORE.

The telegram went on to state that the Belgian batteries "replied with success, especially in the direction of Schoore, where their fire caused a conflagration and violent explosions."

The fine church of Schoore possesses several features of interest from an architectural standpoint.

Its tower and closely crocketted spire and pinnacles are of beautiful proportions, the tower being slightly differently treated to those we have described and illustrated in recent issues. It will be noted, for instance, that the lowest blind arcading is of four plain lancets slightly apart. Above these, in the next stage, are three trilobe-headed shallow lancets unarched, while the belfry is lighted by a two-division uncusped opening with a small circle above, all under one arch. Just above this is a closely arcaded parapet, partly masking the bases of the pinnacles, between which a tiny gable contains a small opening, through which a workman can get outside for the purpose of clearing the gutters, hoisting scaffolding and tackle for repairs, &c.

The long nave and aisles are under one roof, with twin-light traceried windows reaching up to the eaves. The south choir aisle is more of the chantry type, being larger, with higher walls and separate roof and several feet wider than the aisles, while its two large two-light windows have fourteenth century tracery in them. The choir projects beyond the chantry-like aisle before becoming an apse of three sides.

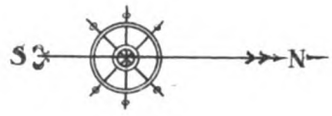
Then, no doubt, the fact that these cities were formerly the most important trading and industrial centres in Northern Europe partly accounts for the popular depreciation. Those to whom the historic sense is lacking may, by the mistaken analogy of our own great and essentially modern cities, such as Birmingham or Manchester, assume that they were trade centres and nothing more. These mediæval industrial capitals were, however, also the chief art *foci* of the time. Indeed, Belgium was to the North of Europe what Italy was to the South—the great artistic centre of mediævalism. Then, till the present year of grace, alas! Belgium had escaped such terrible cataclysms as a wholesale devastation by invading armies, a Protestant Revolution, a Puritan Revolution, and the French Revolution, which did so much to ravage and despoil the churches, abbeys, and monasteries of England and France respectively. Consequently Belgium, in its great national monuments—churches, museums, guildhalls, &c.—retained, up to the present German invasion and occupation, much of its mediæval splendour.

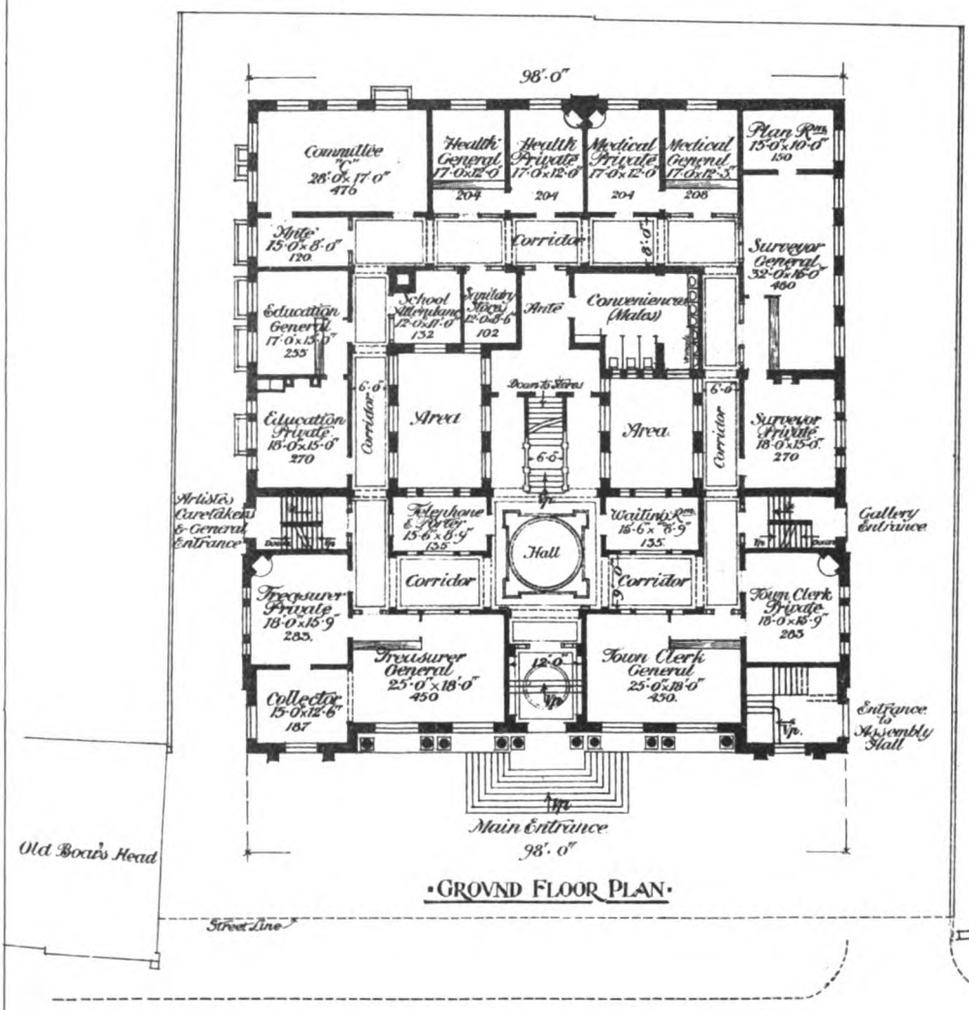
Khaki is a monthly magazine for soldiers and sailors, bringing them as a gift each month interesting and instructive literature. It is not a commercial enterprise, but a purely patriotic endeavour.

THE Cambrian Archæological Association has decided, owing to the war, not to hold its annual meetings this year.

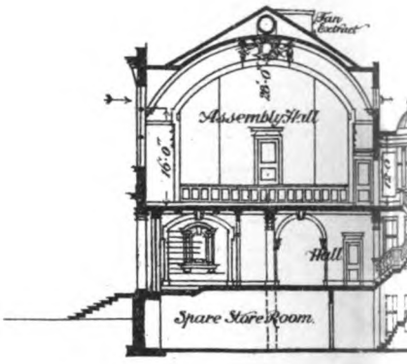
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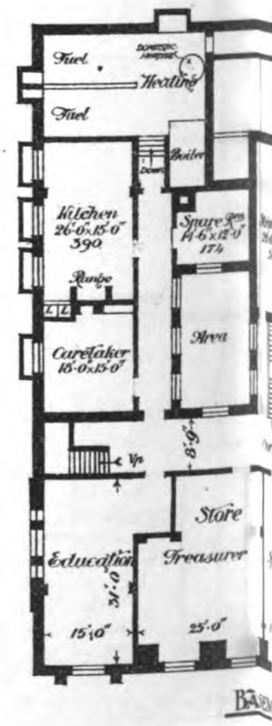
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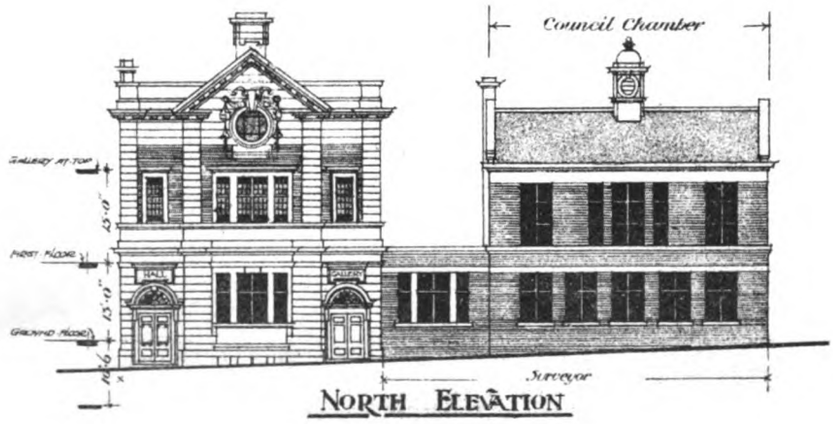


·SECTION



·ELEVATION





NORTH ELEVATION

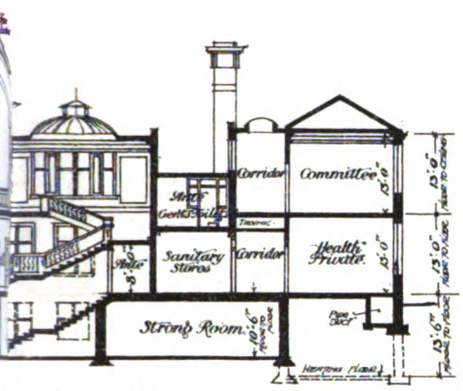
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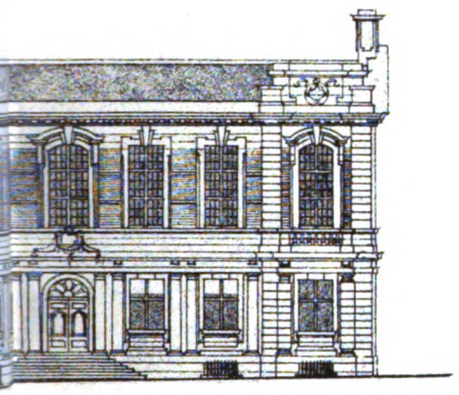
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By Mr. GEO. H. WILLS.

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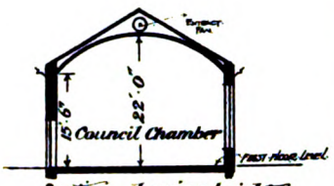


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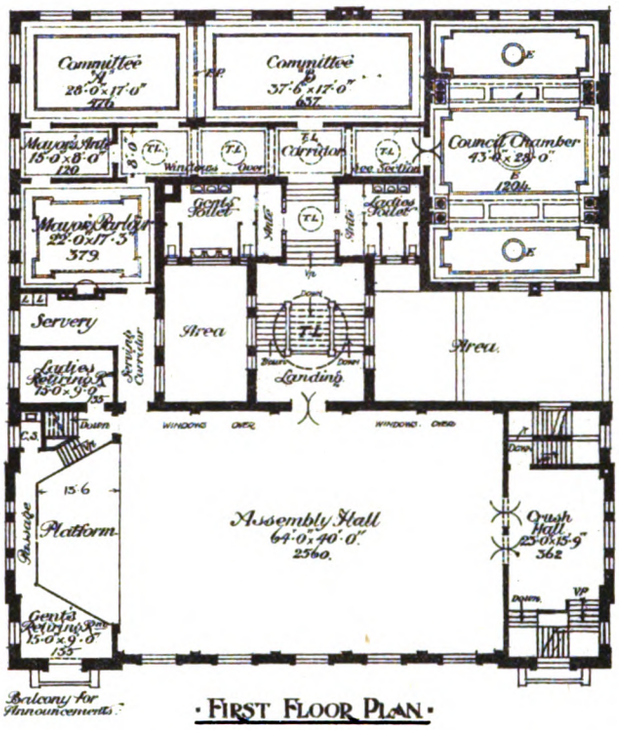


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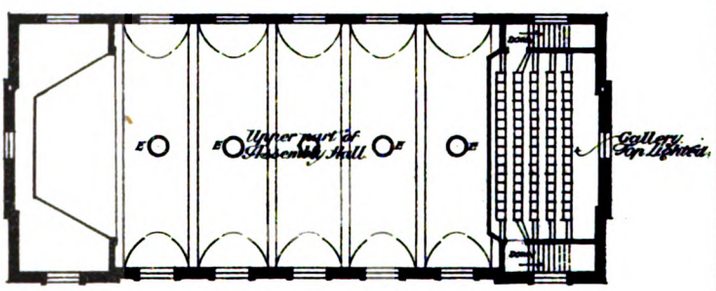
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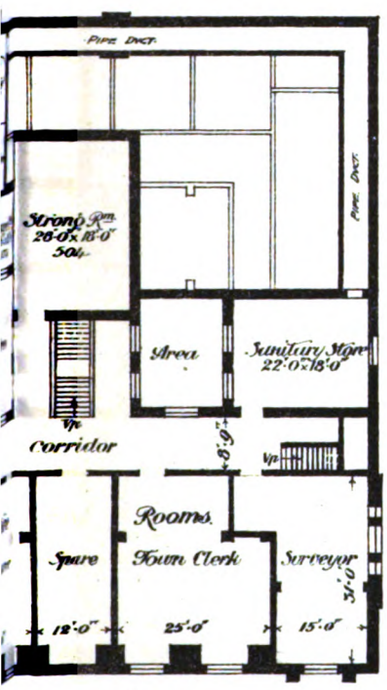
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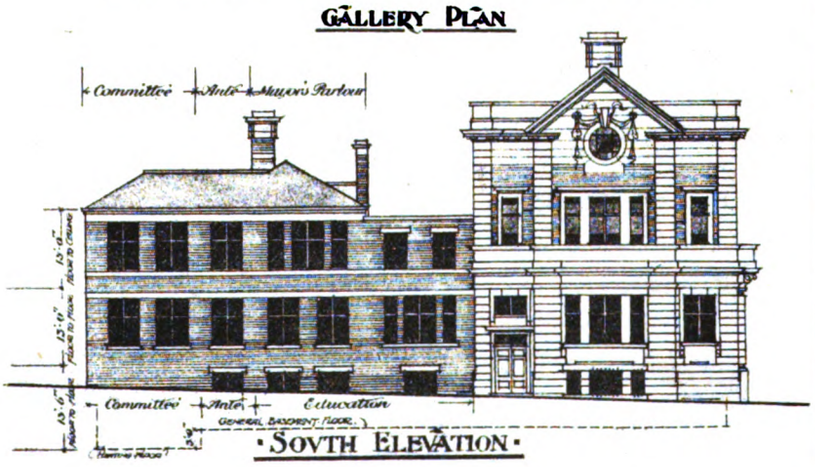
FIRST FLOOR PLAN



GALLERY PLAN



…SEMENT PLAN



SOUTH ELEVATION

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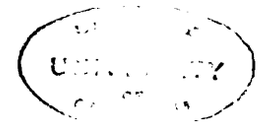
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ELTHAM, KENT, ALMSHOUSES.—THE GATES.

Mr. GEORGE HUBBARD, F.R.I.B.A., Architect.

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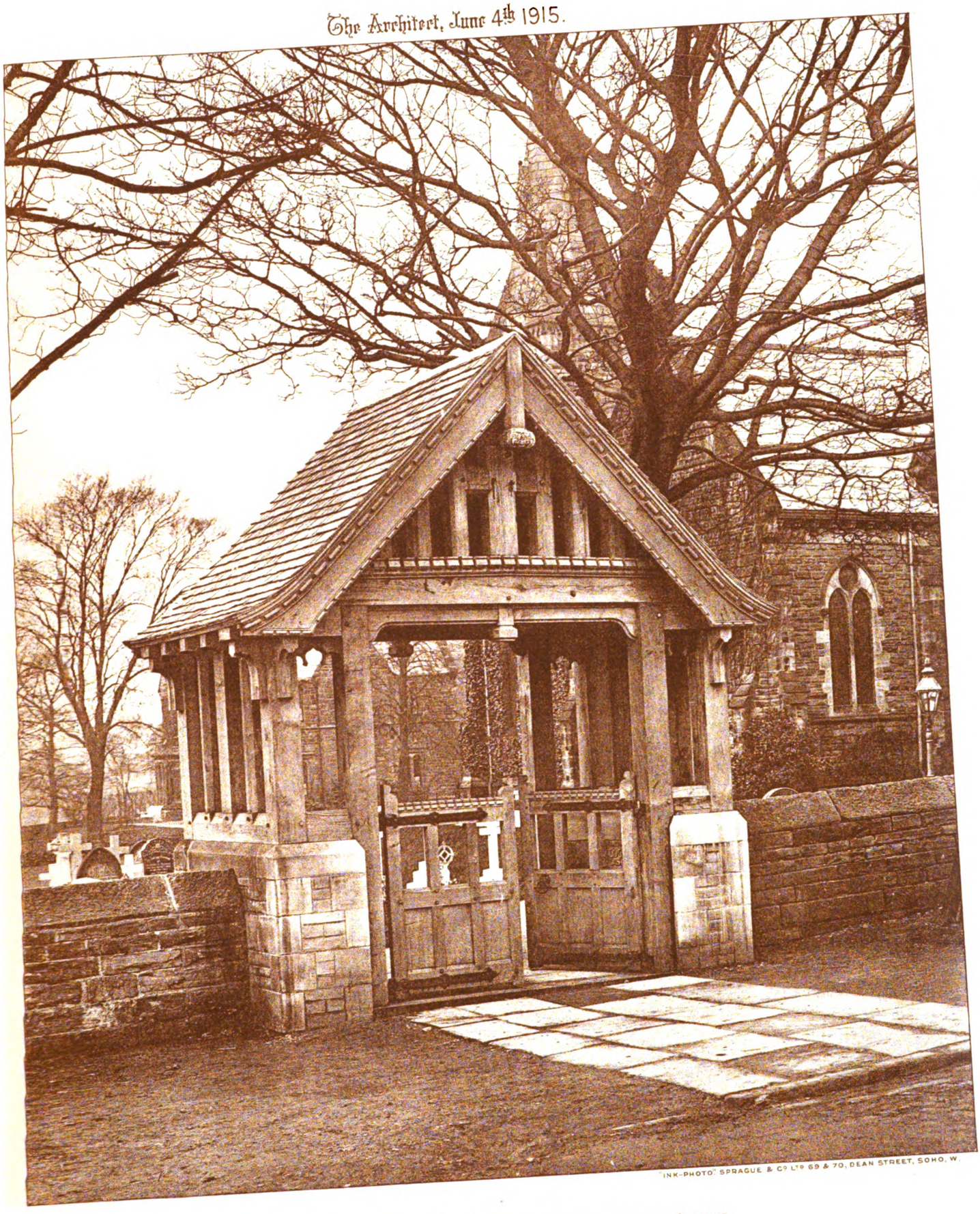
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ELTHAM, KENT, ALMSHOUSES.—THE ENTRANCE.

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LYCHE GATE, MOORTOWN CHURCH, NEAR LEEDS.

Mr. A. E. KIRK, F.R.I.B.A., Architect.

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NOTES ON BOOKS.

"Spons' Architects' and Builders' Pocket Price Book." (London: E. & F. N. Spon, Ltd. 2*s.* 6*d.* net.)

A WORK which reaches its forty-second edition has evidently proved its value to the section of the public for which it caters. But, whatever its merits may be, it also possesses defects, though it will be unnecessary here to do more than suggest two or three of these. On pages 3—7 it would be far better to avoid giving a heading to the right-hand column as it is utilised for various purposes; some of the entries, too, are interchanged between this and the "London" column, as, *e.g.*, "Rowton Houses" and "Cold Store."

The admittedly speculative estimate (see page 45) of 10*s.* per £1,000 of contract, as value for "emptying, &c., old drains and cesspools," is absurdly inadequate; nor do the prices on page 57 for connecting new to old drains seem otherwise. It seems curious that with the rise in wages, the current prices in other respects throughout this book should be so largely unaltered as compared with the edition of 1913, where the rates of wages are notably smaller; incidentally, we may point out that on page 115 the wage for tiler (day work) should, we think, be entered at 1*s.* 0½*d.* How does it come about that washable distemper and Duresco which, but two years ago, were priced at 2*s.* 2*d.* per pail, are now entered at 10*s.*? (see page 235). On page 247 the limewhiting prices have slipped down in setting, giving a very erroneous impression. The only improvement which we note in this edition is the method of tabulating the hire of builders' plant. The index needs careful supervision for re-arrangement of misplaced entries and other purposes, and in general the type used is very trying to the eyes.

"Handrailing for Geometrical Staircases." By W. A. Scott. (London and New York: Whittaker & Co. 2*s.* net.)

THIS short manual, with a nominal fifty-eight pages of text, is primarily intended for the use of "those preparing for the examinations of the City and Guilds and the Worshipful Company of Carpenters." The work is freely illustrated with diagrams, and in a series of thirteen chapters are discussed the position of the tangents, various points affected by the lie of the handrail, the scroll and scroll wreath, the application of the moulds, the curtail step, and the wreathed string. Beyond a reference to the clear diagrams and the general perspicuity of the text, there does not seem to be anything calling for comment. For on the same principle that the country without a history is to be considered blessed, so too may the book not requiring review be regarded as welcome.

"Memoir on the Economic Geology of Navánagar State." By E. Howard Adye. (Bombay: Thacker & Co., Ltd.)

MR. HOWARD ADYE is already known to our readers through a series of articles on "Petrography for Architects," contributed to these columns in 1908. As director of the Geological Survey of Navánagar State (whose present ruler is H.H. Jam Shri Ranjitsinhji), Mr. Adye is, of course, the right man discoursing upon the right subject. And therefore it is that with his presentation of facts we do not attempt, or indeed wish, to join issue; but throughout the 250 pages we should earnestly desire to see a careful revision of the text with a view to correcting typographical errors and literary faux-pas. We might, indeed, select the earliest of the latter for mention here, but it would be tedious to continue the list. On the first page of the Preface, in reference to Salisbury Cathedral, it is obviously absurd to refer to its age as "close upon a thousand years," when it lacks five years of seven centuries to show its commencement. It is also an error of taste for the writer to introduce his own portrait, but the public will welcome that of the once-popular cricketer, "Ranji," who has quitted the sportsman's lawns and pavilions of England for the ruler's silks and palaces of Navánagar. The series of maps and photomicrographs lend additional interest to the Memoir, though the former would prove more readily available if they were preceded by an index-map instead of dependence upon latitude and longitude being indispensable. To architects the main interest of this book will not lie in Chapters I. and II., dealing respectively with the topography and the geological observations, but in Chapter III., which enters into the consideration of the economic minerals and rocks; and more particularly will architects dwell upon the miliolite-limestones, granophyres and felsites for their value as building and ornamental stones. Mr. Adye points out that "miliolite-limestone constitutes by far the most valuable asset available among the economic rocks of the State of Navánagar," and that this State "can justly claim to be possessed of by far the best and most varied series of merchantable miliolites in all Káthiáwár" (the province of which the State under review forms about one-sixth the area). We do not know why Mr. Adye should express surprise that "the bulk of the 'Portland' cement is manufactured in Kent"; what is in a name? Jerusalem artichokes have nought to do with the venerable city of the East, and the world-famous Derby race is run at Epsom. There is a useful appendix dealing with road-making, and the book is finished off with a copious and praiseworthy index, where there are barely a dozen mis-placed entries—a mere trifle in the course of thirty columns extending over fifteen pages.

CORRESPONDENCE

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Labour Troubles.

SIR,—I would not like to suggest that your correspondent Mr. C. T. Freeman, whose letter appears in your last week's issue, has purposely misread my letter to you of May 17, but suggest that he has misunderstood my meaning, but which I think was perfectly plain. I state once more that all labour disputes at this present time are unpatriotic, and that all men who strike should be made to work, and for that purpose should be drafted according to their age either into the Navy, Army, or into the factory for the purpose of turning out munitions. Personally my feelings on the question of "strikes" are that often they might be averted if a little more "give and take" was introduced into the question in dispute. That at such a time in our history it should be possible for any body of men to "down tools" is to my feeble mind a disgrace! Let us pull together; we are up against the biggest job this country has ever entered into, and never before was the old remark more true, "United we stand, divided we fall." May we all be united, even Mr. C. T. Freeman.—Yours, &c.,

Bournemouth: May 31, 1915. "TAPE AND SQUARE."

SIR,—I have been interested in both letters in your paper. "Tape and Square," of Bournemouth, has my "war" sympathy, and Mr. C. T. Freeman my "after-war" sympathy. It is a long way to Tipperary, and a yet longer way to the "millennium"; but we are now thinking it's a long way to Berlin, but we've got to get there. "Tape and Square's" way is preferable to Mr. C. T. Freeman's, as we have to provide men to fight, materials to fight with, and "silver bullets" to pay for both, so let client, architect, builder, and men do their bit towards this end.—Yours, &c., W. H. G.

Lambeth, S.E.: June 1, 1915.

SIR,—In Mr. C. T. Freeman I recognise an angel who does not fear to tread the stony paths of incomprehensible phrasemongering. Doubtless he will regard me as the fool needlessly rushing in where he is fearless. But I have been making an earnest, honest endeavour to discover just what he means in his reply to "Tape and Square's" sensible letter in the issue of *The Architect* of the 21st ult. If it be Hunnish to make an unwilling man serve his country in times like these, then, in the interests of the community, let us recognise the merits of Attila.

No one, in the twentieth century, talks of "betters" and "upper ranks"; Mr. Freeman is about eighty years behind the times in advancing such an idea, and it is not far less antiquated to see the *real* worker in the misnamed "working man." And why, oh why, Sir, are our soldiers to be libelled (or is it our Government that is libelled?) respecting our object in the gallant fight being waged? Never has England fought so unselfishly as to-day. The fact is that "Tape and Square" wrote as a practical man with experience as his guide, whereas Mr. Freeman has unleashed the dictionary while reining-in

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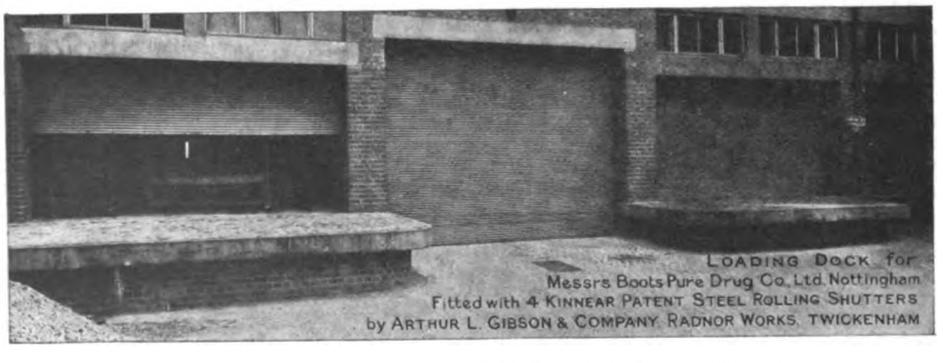
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both grammar and composition in his futile endeavour to anticipate the millennium.—Yours, &c.,

PERCY L. MARKS.

10 Matheson Road, West Kensington: June 1, 1915.

Catalogues Wanted.

SIR,—We should be much obliged if you would call attention in the next issue of your paper to the removal of our offices.

The building in which we have been for the last nineteen years is being pulled down, and we are moving to larger and more convenient offices at 40 Chancery Lane, W.C., at the end of this month.

Our new telephone numbers will be Holborn 6490 and 6491, and our new telegraphic address will be "Potential, Holb., London."

We shall be glad to receive recent catalogues suitable for filing from any firms whose goods are in our way of business.

With many thanks in anticipation, we beg to remain, Yours, &c.,

TYLER & FREEMAN
(Electrical Engineers).

20 New Bridge Street: May 25, 1915.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 10,669. April 30, 1914. Ball cocks. John Shanks, Tubal Works, Barrhead, Renfrewshire.—This invention relates to improvements in ball cocks for controlling the supply of water to cisterns or the like of the type comprising a casing having inlet and outlet connections and fitted with a diaphragm valve controlling the outlet, and with a release valve operated by a float-controlled member. The invention consists in the formation of the diaphragm at a free part with a perforation eccentric to the valve. Fig. 1 is a vertical section. Fig. 2 shows a modification

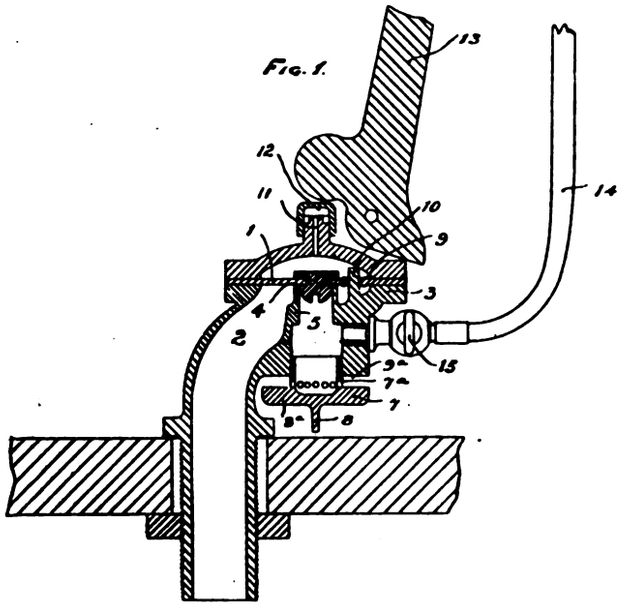


FIG. 1.

in elevation. 1 denotes the diaphragm which, as in prior constructions, is so fitted in relation to the water inlet connection 2 that the water inlet to the two-part diaphragm casing 3 is eccentric to the diaphragm 1, the valve part 4 being disposed centrally of the diaphragm 1. The diaphragm and the valve part 4 form a diaphragm valve which co-operates with a seating presented by the end face of an outlet connection 5, from which connection the water passing the diaphragm valve flows into the cistern or into a silencing tube 6 (fig. 2), and thence into the cistern. Fitted at the outlet of said connection 5, or at the flanged end of said silencing tube 6, is an adjustable ported tubular member 7, the ports 7^a of which may be more or less covered according to the position of said member. The said member 7 is screw-threaded into the end of said connection 5 or silencing tube 6, according to the position to which the member 7 is adjusted by rotation of a wing 8 formed on a disc 8^a on the end thereof; the ports may be more or less covered, the extent to which the ports are covered being varied to suit the pressure. The said disc 8^a is so positioned in relation to the end face 9^a or flanged end of the outlet connection or silencing tube that the water is deflected from a truly vertical path and passes

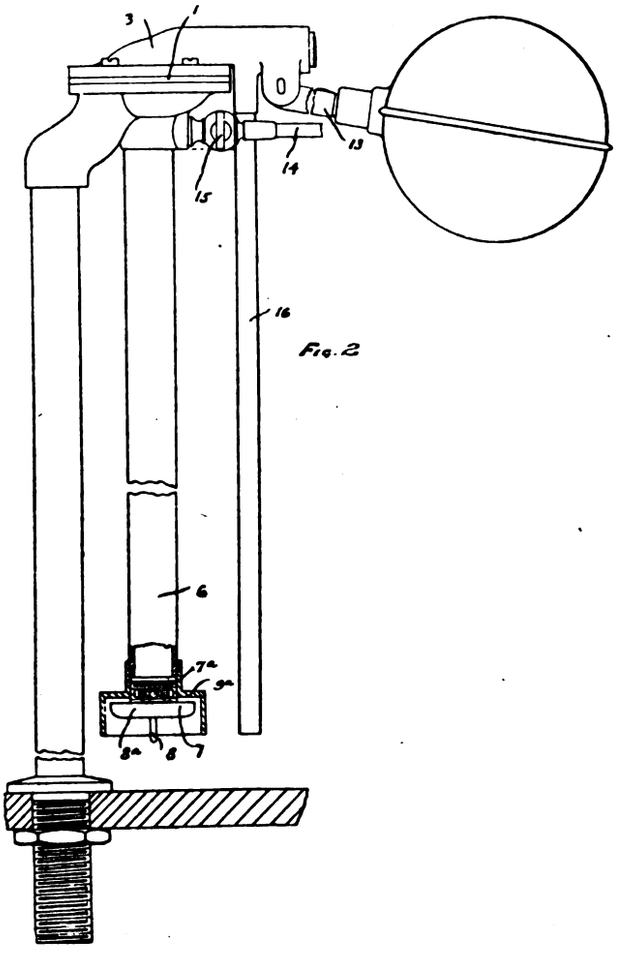


FIG. 2.

into the cistern in the form of a thin film. By-water passes to the side of the diaphragm 1 remote from the inlet by way of perforation 9 formed in a free part of the diaphragm eccentric to the valve and entered by a projection 10 formed on the casing 3 on one or other side of the diaphragm, said projection 10 serving on fluctuation of the diaphragm to dislodge any obstruction tending to choke the perforation; it is essential that the perforation be formed in a free part of the diaphragm so that the by-water passage may be self-cleaning. On the side of the diaphragm casing remote from the inlet is formed, as usual, a port 11 adapted to be closed by the usual movable cap member or release valve 12 dependent for its actuation on the movement of the float-controlled lever 13, operating in a manner well known. As shown in figs. 1 and 2, there is fitted to the outlet connection a so-called after-service tube 14 for refilling the closet-pan after discharge. To prevent the possibility of undue waste of water, the tube 14 is preferably fitted with a manually adjustable cock 15 controlling the flow of water through said tube 14. As shown in fig. 2, a release tube 16 may be fitted to the diaphragm casing, serving to conduct excess water from the side of the diaphragm adjacent to the member 12. The ball cock may be fitted so that the diaphragm is located in a horizontal or a vertical plane or any intermediate plane. The pressure of the water in the chamber of the valve through the inlet connection 2 on the diaphragm 1 is equal, per unit area, owing to the by-water communication, to the lower surface of diaphragm permitted by the port 9. As the upper surface of the diaphragm valve is of greater effective area than the lower surface, the water pressure in the valve chamber will normally hold the valve in engagement with its seat on the outlet connection 5 through which water is discharged into the cistern, to fill the same. The release valve 12, which has a sliding fit on the nipple through which the port 11 is formed will, when the cistern tank is filled with water, be held to its

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seat by an elbow or projection on the float-controlled lever 13. When, however, water is discharged from the cistern, for the flushing operation, and the float-controlled lever 13 falls so that it no longer holds the release valve 12 to its seat, it will be lifted by the pressure of water in the valve chamber, thereby opening the port 11 and releasing the water pressure from the upper side of the diaphragm valve, permitting the latter to be lifted from its seat on the outlet connection 5, so that water will flow through the passage in the outlet connection to fill the cistern.—March 17, 1915.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Altrincham.—Council school, Princes Road.

Stalybridge.—St. Paul's Church school: alterations.

DORSET.

Weymouth.—Houses, Wyke Road. Mr. S. Jackson, architect, Bridge Chambers.

ESSEX.

Chelmsford.—Prudential Assurance Company's Offices, Market Road and Duke Street. Mr. P. Waterhouse, F.R.I.B.A., architect, Staple Inn Buildings, London.

Ilford.—Workmen's dwellings. Council surveyor.

GLOUCESTERSHIRE.

Bristol.—Labour Exchange and Probate Registry, Colston Avenue. H.M. Office of Works, Small Street.

Premises, next St. Peter's Hospital: additions and alterations as Offices, for B.G. (£2,600).

KENT.

Gillingham.—St. Augustine's Church.

LANCASHIRE.

Blackpool.—Christ Church: schools.

Burnley.—Council schools, Piccadilly Road: extensions. Messrs. G. & S. Keighley, architects, 23 and 27 Nicholas Street.

Darwen.—Cottage Homes, Sunnyhurst. Mr. G. G. Sames, architect, 2 Knott Street.

MIDDLESEX.

Hendon.—House, Bridge Lane, for Mr. S. F. Allen.

House, Wellgarth Road, Garden Suburb, for Mr. W. A. McCormick.

Nursery training school, Wellgarth Road, for the Women's Industrial Council.

STAFFORDSHIRE.

Wolverhampton.—St. Patrick's R.C. School, Wednesfield Road (£7,000).

SUSSEX.

Bexhill.—Proposed hospital.

WARWICKSHIRE.

Coventry.—Baptist Church and Sunday School, near Hearsall Common.

Factory, Quinton Road and Mile Lane, for Mr. W. I. Iliffe.

Factory, rear of Shackleton Road, for the Precision Engineering Company.

Foundry, Trafalgar Street, for the Reliance Foundry Co.

Three houses, Styvechale Avenue. Messrs. C. Luck & Son, builders, Earlsdon.

No. 48 Cross Cheaping: alterations, for Messrs. Brewetts.

Two houses, Holbrook Lane, for Mr. J. E. Thompson.

House, Parkside. Mr. H. Cousins, builder, Park Side.

Four houses, Beaconsfield Road, for Messrs. Jervis Brothers.

Five houses, Farman Road, for Mr. C. E. Needham.

Two houses, Harefield Road, for Mr. R. E. Matthews.

Houses, &c., Lewis Road, for Mr. F. Hainsworth.

Two houses, Melbourne Road, for Mr. W. Bromley.

Eight houses, Shaftesbury Road, for Mr. A. J. Crump.

Six houses, Walsgrave Road. Messrs. Clarke & Sons, builders, Coronation Road.

Four houses, Welland Road, for Mr. A. Avis.

Theatre, Far Gosford Street, for Mr. C. Orr.

Nuneaton.—Eight houses, Marlborough Road, for Mr. Woodhead.

WILTSHIRE.

Swindon.—Joint isolation hospital: additions and alterations to the Administrative Block (£2,700).

WORCESTERSHIRE.

Droitwich.—The "Imperial" Hotel, for Mr. F. T. Evered.

Evesham.—Nos. 57 High Street and 65 Bridge Street: rebuilding. Messrs. Dicks & Waldron, architects, 1 Market Place.

Great Hampton.—Council school for 100 places.

YORKSHIRE.

Bradford.—Weaving shed, Frizinghall. Messrs. S. Jackson & Son, architects, 11 Tanfield Chambers.

Bridlington.—Refuse destructor (£6,350).

Brighouse.—Bungalow, Hove Edge. Mr. H. Hirst, builder, Owler Ings.

House, Smith House Lane, for Mr. W. Jagger.

Shipley.—Congregational Church and Sunday Schools, Bradford Road.

Wakefield.—Infectious diseases hospital, Park Lane: additions. City surveyor.

Wombwell.—One hundred Council houses. Council surveyor.

WALES.

Barry.—House, Colcot Road. Mr. R. S. Griffiths, architect, Gilfach Road, Tonypandy.

Fifty-two houses, for the Welsh Town Planning and Housing Trust. Mr. T. Alwyn Lloyd, architect, 21 Park Place, Cardiff.

Gellygaer.—Council school, for 400 girls (£5,600). Mr. D. Pugh Jones, County architect, County Hall, Cardiff.

Pontypridd.—St. Catherine's Church: additions. Messrs. A. O. Evans, Williams & Evans, architects, Court Chambers.

Sketty.—Bungalow, Hendrefoilan Road, for Mr. D. Williams.

Two villas, Carnglas Road, for Mr. R. Humphreys.

Two villas, Carnglas Road, for Mr. A. Williams.

Vron.—House, for Mrs. C. Davies.

SCOTLAND.

Bathgate.—St. Columba's Episcopalian Church, Bridgend.

Clydebank.—Workmen's dwellings.

Dalmuir.—Workmen's hotel, Agamemnon Street, for the Benbow Hotel Co., Ltd.

Dunfermline.—Cinema house, Queen Anne and Bath Streets (1,200 sittings), for Mr. D. Younger.

Edinburgh.—W.M. Halls, &c., Nicolson Square. Messrs. Cousin, Ormiston & Taylor, F.R.I.B.A., architects, 140 Princes Street (£6,500).

House, South Inverleith Avenue, for Mr. W. B. Ross.

Works: extensions, for the North British Rubber Co., Ltd.

Nos. 12 and 14 South St. Andrew Street, for Y.M.C.A. Mr. G. W. Browne, architect, 1 Randolph Cliff.

Glasgow.—Tolbooth Steeple: rebuilding (£3,300). Mr. J. Keppie, F.R.I.B.A., architect, 257 West George Street.

No. 39 Dover Street: alterations as picture house, for Mr. J. Graham.

Germiston Iron Works, Springburn, for Messrs. A. & J. Main & Co., Ltd.

Glenlomond.—Fife and Kinross Joint Sanatorium.

Leven.—Cinema house, for Messrs. Green.

IRELAND.

Ballinamallard.—"Ferney House": additions and alterations. Messrs. F. E. Townsend & Son (of Enniskillen), architects.

Ballyconnell.—Proposed dispensary residence (£1,000). Mr. P. J. Brady, architect.

Dublin.—Factory, Upper Abbey Street: extension, for Messrs. Bewley & Draper, Ltd. Mr. C. H. Ashworth, F.R.I.B.A., &c., architect, 12 and 13 William Street.

House. Mr. F. Bergin, C.E., architect, 36 Westmoreland Street.

Stores, Wentworth Place. Mr. G. P. Sheridan, F.R.I.A.I., &c., architect, 1 Suffolk Street.

Fivemiletown.—House. Messrs. J. Fraser & Son (of Belfast), architects.

Gorey.—Ninety-eight labourers' cottages, for R.D.C. Mr. B. W. Webster, Council architect.

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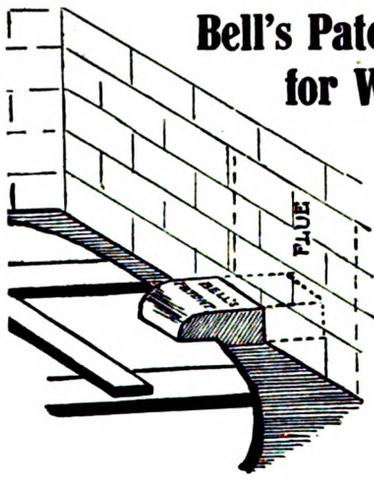
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THE
Architect and Contract Reporter.
FRIDAY, JUNE 4, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addresed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

IRELAND.—The Cleansing Committee of the Corporation of Dublin invite designs from landscape designers, &c., resident in Ireland for the laying-out of the reclaimed ground at Fairview, Dublin, and for the conversion of same into a public park. Premiums of £50, £10, and £5 will be awarded for the first, second, and third designs respectively, as selected. A copy of the conditions of competition, and a map of the site, will be furnished to each intending competitor on lodgment of £1, which will be returned on receipt of a design and report. Applications to be addressed to the Secretary, Cleansing Committee, Dublin Corporation, Lord Edward Street, Dublin.

SCOTLAND.—June 11.—The Dundee School Board propose to alter and extend the Harris Academy, and are prepared to receive designs for the building in competition. The competition is limited to architects in practice and carrying on business on their own account within the municipal boundaries of the city of Dundee. The Board have appointed Mr. Alexander N. Paterson, M.A., A.R.S.A., F.R.I.B.A., Glasgow, to act as their assessor in the competition. Application for particulars, &c., should be made not later than Friday, June 11, to Mr. John E. Williams, clerk, School Board Offices, Dundee.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1*s*. deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

BOOTLE.—June 18.—For alterations to existing lavatories, &c., at the secondary school for boys, Balliol Road, for the Corporation. The Borough Engineer's Office, Town Hall, Bootle.

BRISTOL.—June 8.—For erection of a warehouse at Tylle Hill, for the Great Western Railway Company. The Engineer, Bristol Station.

CREWE.—June 15.—For erection of three workmen's cottages at the sewage works, Crewe, for the Town Council. Deposit £1. Mr. G. Eaton-Shore, surveyor, Earle Street, Crewe.

DARLINGTON.—June 14.—For alterations to premises in Priestgate, for the Darlington Co-operative and Industrial Society, Ltd. The Secretary at the Society's Office, Priestgate, Darlington.

DOVER.—June 16.—The War Department invite tenders for repairs and materials from July 7 till March 31, 1917, in the Dover district. Forms of tender, conditions of contract, and all necessary information may be obtained at the R.E. Office, Archcliffe Fort, Dover, by letter, addressed to R. P. Littledale, Colonel Commanding Royal Engineers, or in person, between 10 A.M. and 4 P.M. up to June 7. Tenders are to be forwarded to the Director of Army Contracts, War Office, London, S.W., by June 16.

DURHAM.—June 5.—For works required in proposed alterations, &c., to premises, 4 and 5 Claypath, for the Durham Co-operative Society. Mr. G. Orr, architect and surveyor, 16 The Avenue, Durham.

GOLCAR.—June 10.—For the various trades (except carpenters' and joiners') required in the erection of three dwelling-houses in Leymoor Road. Mr. A. Shaw, architect, Golcar.

IRELAND.—June 8.—For erection of twenty labourers' single cottages and fencing two plots, for the Dromore West Rural District Council. A contractor may tender to erect all the cottages and fence all the plots, or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the engineer under a penalty for delay. Charge 5*s*. The Clerk to the Rural District Council, Dromore.

IRELAND.—June 19.—For building four labourers' single cottages and for fencing four plots, for the Castlebar Rural District Council. A contractor may tender to erect all the cottages and fence all the plots or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the Council's engineer under a penalty for delay. Charge 5*s*. The Clerk of the Rural District Council, Castlebar.

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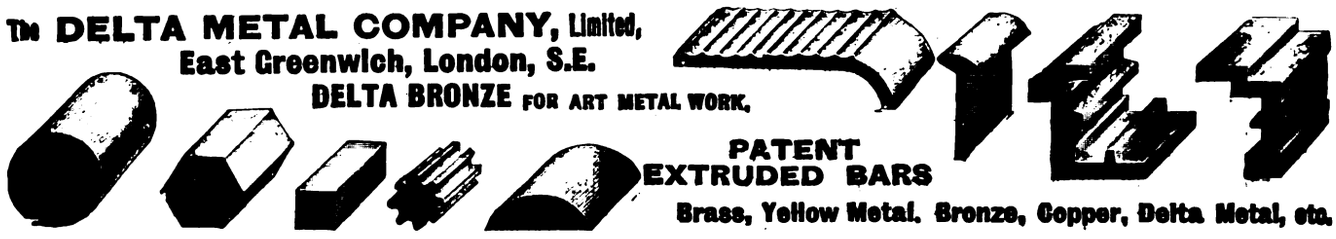
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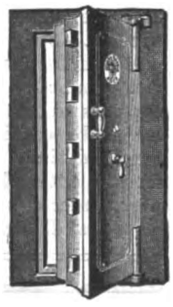
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IRELAND.—For the reconstruction of Ballyscullion Church, Toome, Co. Antrim, for the Rev. Peter McNamee, P.P. The Presbytery, Bellaghy, or Mr. J. V. Brennan, architect, Belfast Bank Chambers, Belfast.

ISLE OF WIGHT.—June 8.—For repairs to Gurnard Bridge, for the Isle of Wight County Council. Particulars may be obtained on application to the county surveyor, Mr. S. R. Cocks, St. Thomas Street, Ryde, or from Mr. J. Dufton, clerk, 20 Holyrood Street, Newport, I.W.

ISLE OF WIGHT.—June 9.—For repairs and other work to the bridge at Shepherd's Chine, Atherfield, on the road between Chale and Freshwater, for the Isle of Wight Rural District Council. Mr. L. A. Cozens, surveyor, Walmer Villa, Castle Road, Newport, Isle of Wight.

KIRKBURTON.—June 9.—For erection of four new shelters at the Storthes Hall Asylum, Kirkburton, near Huddersfield, for the West Riding Asylums Board (trades: mason, carpenter and joiner, roof tiler, plumber and glazier, and painter). Mr. W. E. H. Burton, A.M.I.C.E., architect, West Riding Asylum, Wakefield. Send £1 by separate letter to the Treasurer to the Board, West Riding Asylum, Wakefield.

LAZONBY.—June 10.—For the reseating and renovation of the Lazonby Wesleyan Church and also for erecting an entrance porch, for the Trustees. Mr. A. Knewstubb, P.A.S.I., architect and surveyor, St. Andrew's Chambers, Penrith.

LITTLEBOROUGH.—June 5.—For structural alterations to premises, 36 and 38 Hare Hill Road, for the Littleborough Co-operative Society, Ltd. Send names and deposit £1 1s. by June 5 to Mr. H. H. Clough, M.S.A., architect and surveyor, Butts Avenue, Rochdale.

LONDON.—June 7.—For repairs, painting, and other works at the infirmary, Rackham Street, Notting Hill, W., for the St. Marylebone Board of Guardians. Send application by June 5 to the Steward of the Infirmary, Rackham Street, Notting Hill, W.

LONDON.—June 17.—For the rebuilding of the Threadneedle Street branch post office, London, E.C., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. Mr. E. Cropper, H.M. Office of Works, 22 Carlisle Place, Westminster, S.W.

MANCHESTER.—June 9.—For the supply, delivery, and erection at the Stuart Street generating station of foundations for additional cooling towers, for the Electricity Committee. Deposit £1 1s. Mr. F. E. Hughes, secretary, Electricity Department, Manchester, and Messrs. C. S. Allott & Son, civil engineers, 46 Brown Street, Manchester.

NUNEATON.—June 9.—For erection and finishing of new dye works, including dye houses, drying rooms, sorting, pressing, and finishing rooms, boiler house, and chimney shaft on the Newdigate Arms Estate, Nuneaton, for Messrs. Oram Bros. Messrs. Stockdale Harrison & Sons, architects, 7 St. Martin's East, Leicester.

SCOTLAND.—June 8.—For mason, carpenter, and slater works of proposed additions and alterations on steadings at the following farms: Auchrynie, Strichen (A. R. Strachan, tenant); North Auchmachar, Strichen (John Pennie, tenant); Outhill, Longside (G. Thomson, tenant). The respective tenants or Mr. W. E. Gauld, F.R.I.B.A., architect, 11A Dee Street, Aberdeen.

SCOTLAND.—June 8.—The Pumpherston Oil Company, Ltd., invite tenders for the erection of forty-eight workmen's cottages, near Livingston Station, the work to be all completed by October 31 next. Pumpherston Oil Works, near Uphall.

SCOTLAND.—June 9.—For the mason, carpenter, and slater works of additions to and alterations on steading at West Whiteside, Cortes, Rathen (George Murison, tenant). The Tenant and Mr. R. Rae, clerk of works, Balmedie.

SCOTLAND.—June 12.—For the following works required in connection with the proposed construction of a public convenience at Shieldhall—viz.: (1) Mason, brick, joiner, &c., works; and (2) sanitary fittings—for the Glasgow Corporation. The Office of Public Works, City Chambers, 64 Cochrane Street, Glasgow.

SCOTLAND.—June 15.—For erection of not more than 150 dwelling-houses on the Roxburgh Street site, for the Greenock Corporation, each house to consist of two or three apartments, with scullery and w.c., in conformity with the local building regulations. The site is bounded by Roxburgh Street, Duncan Street, Holmscroft Street, and Captain Street. The Office of Public Works, Municipal Buildings, Greenock.

SCOTLAND.—June 10.—For contract to erect retaining and parapet wall, railing, and gate at vacant ground adjoining Holyrood Abbey U.F. Church, for the Edinburgh Corporation Roads Department. The City Road Surveyor, City Chambers, Edinburgh.

SEDBERGH.—June 11.—For the several artificers' works required in new premises (garage, shops, dwelling-house, &c.) on site of Hope House, Sedbergh, for Mr. Alfred Braithwaite. Mr. S. Shaw, F.R.I.B.A., architect, Kendal.

THORNES.—For alterations and additions to St. James' Schools. Mr. W. Harold Watson, architect and surveyor, Barstow Square, Wakefield.

WALBY.—For joiners', masons', and other work for new house at Walby, for Mrs. Thompson. Messrs. Dixon & Mitchell, land agents, Devonshire Street, Walby.

WALES.—June 6.—For erection of a residence at Tonteg, Llantwit Fardre, for Mrs. John Evans, The Cottage, Llantwit. Messrs. A. Ll. Thomas & G. S. Morgan, architects and surveyors, Pontypridd.

WALES.—June 12.—For the following works, for the Glamorgan County Council: (1) Boundary walls and fences to new school site at Glynneath; (2) alterations to the Penllergaer school; (3) alterations to infants' school at Taffs Well; (4) new boarded ceilings at Garth schôol, Maesteg; (5) new coalhouse and alterations to offices at the Council school at Rhigos; (6) alterations to offices at Godrergraig school, near Ystalyfera; (7) painting the following schools and school-houses in the western division during the midsummer holidays in August: Reynoldston and house, Rhossili, Gowerton boys', Pontardulais' boys' and girls', Penrheol, Garnswllt, Waunarlwydd, Gorseinon boys', Plasnewydd girls' and infants' (Maesteg), Garth mixed and infants' and temporary building (Maesteg), Maesteg secondary school (science rooms, cookery and gymnasium block), Glynneath boys', Aberdulais infants', Clyne mixed and infants' and temporary school, Cadoxton mixed and infants', Neath higher, Crynant mixed, Alltwen mixed, Wern boys', girls', and infants', Rhiwfawr, Bryn Aberavon boys', girls', and temporary schools, Cadle infants, Gendros infants', Gors (Cockett) Caerau infants', Brynhyfryd (Briton Ferry), Neath Road and temporary building (Briton Ferry), Craigcefnparc mixed and infants', Banwen infants', Lonlas, Sketty mixed, Dunvant mixed and infants', Tairgwaith vestry, Cwmrhydyceirw vestry, four cottages at Herbert Road (Melincrythan), three cottages at Panteg (Ystalyfera), houses at Gwauncaegurwen, Portardawe, and Cwmllynfell schools. Mr. T. Mansel Franklen, clerk of the County Council, County Hall, Cardiff.

WALES.—June 21.—(Contract No. 19) For the construction of a masonry retaining wall, about 335 yards in length, with carriageway and footway works and four-stall urinal, at Duffryn Road, Caerau, for the Maesteg Urban District Council. Deposit £1 1s. Mr. Samuel J. Harpur, M.Inst.C. and M.E., the engineer to the Council, 32 Commercial Street, Maesteg.

WEST SUFFOLK.—June 14.—For repairs, &c., during the summer holidays, at the following Council schools: Brockley, Fornham All Saints', Glemsford, Haverhill, Mildenhall Beck Row, Mildenhall infants', Mildenhall West Row, Newmarket Exning, Walsham-le-Willows infants', Whepstead, for the West Suffolk Education Committee. Mr. A. A. Hunt, M.S.A., county architect, 51 Abbeygate Street, Bury St. Edmund's.

WIMBLEDON.—For repairs, &c., at South Wimbledon Club. The Club, 6 and 8 Russell Road, Wimbledon.

WOOD GREEN.—June 9.—For the erection of a covered rifle range, for the Wood Green Urban District Council. Deposit 10s. 6d.

TENDERS.

BINGLEY.

For the various trades required in erection of a warehouse at Clyde Street Mills. Mr. F. ATKINSON, architect, Penny Bank Chambers, Shipley. Quantities by the architect.

Accepted tenders.

J. H. Clark & Sons, masons, Bingley.
Greenhow & Murgatroyd, joiners, Keighley.
Wm. Thornton, slater, Bingley.
R. Bailey, plumber, Bingley.
W. Spurr, plasterer, Bingley.
W. H. Heywood & Co., patent glaziers, Huddersfield.
Total amount of accepted tenders, £474 0s. 7d.

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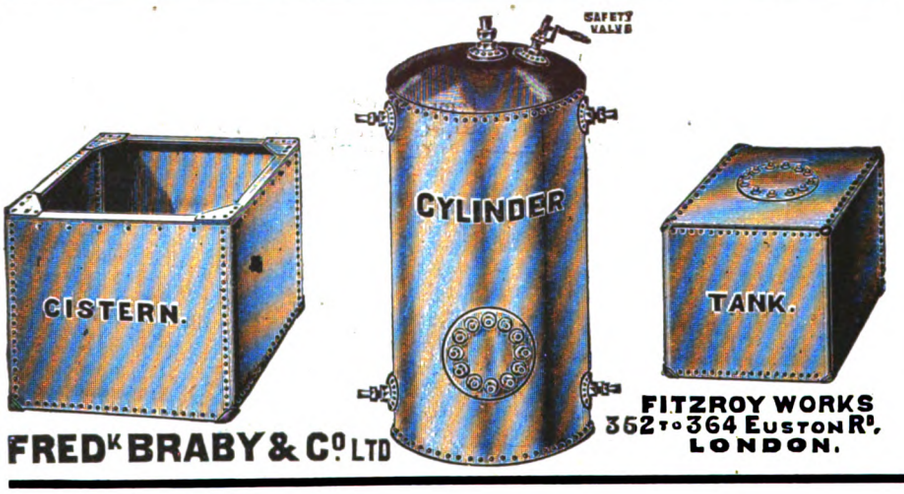
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EASTBOURNE.

For alterations and additions to "Roseneath," Eastbourne, for new private hotel, for the Rev. Sir Peile Thompson, Bart. Mr. S. G. SCALES, M.S.A., architect, Eastbourne. Quantities by the architect.

	Time Required Weeks.	Estimate for Building.	Estimate for Boundary Walls and Drives.
King & Son	52	£11,875	£705 0 0
Mark Hookham	—	11,967	501 12 0
Peerless-Dennis & Co.	37½	11,684	678 0 0
Longley & Co., Crawley	50	11,568	732 0 0
Miller & Selmes	39	10,908	519 0 0
Chilton, Uckfield	36	10,430	549 0 0
Bodle & Addison	36	10,380	570 0 0
Mark Martin & Sons	—	10,345	365 0 0
Jones & Andrews, Beckenham	40	10,180	597 10 0
G. BAINBRIDGE & SON (*accepted*)	35	9,870	536 0 0

All the rest of Eastbourne.

MORPETH.

For further decorative work at St. James' Church. Mr. A. B. PLUMMER, F.R.I.B.A., diocesan surveyor and architect, Newcastle.

G. LAIDLER, Newcastle (*accepted*) . . £108 10 0

NEWCASTLE.

For re-roofing and flooring, &c., to warehouse, Love Lane, Newcastle. Mr. A. B. PLUMMER, F.R.I.B.A., architect, Newcastle.

STANLEY MILLER, Newcastle (*accepted*) . £597 7 0

NORWICH.

For the erection of a factory, St. Peter's Street, for Messrs. Curl Bros., Ltd. Messrs. MORGAN & BUCKINGHAM, architects and surveyors, Norwich. Quantities by the architects.

Hurn & Son	£2,893 0 0
Youngs & Son	2,841 0 0
Scarles Bros.	2,683 0 0
Gill & Son	2,397 0 0
Hammond	2,357 0 0
T. H. YELF, Riverside Road (*accepted*)	2,275 0 0

All of Norwich

NORTH SHIELDS.

For additions to Tyne Sailors' Home. Mr. A. B. PLUMMER, architect, Newcastle and Tynemouth.

J. PELTON, North Shields (*accepted*)	£2,395 14 7
J. G. & T. G. Leighton	2,242 0 10
Newbold	2,102 7 6
Peel	2,044 8 9
Burton	2,036 10 3

TWEEDMOUTH.

For sanitary improvements to the Vicarage. Mr. PLUMMER, F.R.San.I., diocesan architect, Newcastle.

M. GRAY & SONS, Berwick (*accepted*) . £195 11 11

WALES.

For the erection of a vestry at St. Catherine's Church, Pontypridd. Messrs. A. O. EVANS, WILLIAMS & EVANS, architects, Pontypridd.

Davies & Sons	£798 0 0
Harries	626 7 2
Williams & James	620 0 0
Julian	563 0 0
D. Jones	542 12 0
Jones Bros.	526 0 0
E. JONES & SONS, Pontypridd (*accepted*)	518 17 6

WHORLTON (NEAR NEWCASTLE) CHURCH.

For erection of caretaker's cottage. Mr. A. B. PLUMMER, F.R.I.B.A., F.R.San.I., diocesan architect, Newcastle.

W. R. JAMESON, Kenton, Newcastle (*accepted*) £459 6 3

THE Mayo (Ireland) Asylum Committee have decided to provide additional buildings for 250 patients if the necessary loan can be obtained from the Treasury.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 6,451. March 13, 1914. Dated under International Convention, March 19, 1913.—H. C. B. Christophersen, Slemdal, near Christiania, and C. A. Johansson, Christian Augustsgate 11, Christiania, Norway. Pulley blocks (particularly adapted for use as a fire escape).

10,712. April 30, 1914.—A. W. Robinson, 14 Phillips Square, Montreal. Apparatus for cutting trenches, small canals, or drains.

10,814. May 1, 1914.—Alexander Jackson and Carbic, Ltd., 51 Holborn Viaduct, E.C. Gas generating apparatus.

10,846. May 2, 1914.—L. G. J. Bratt, 3 York Road, West Norwood, and J. A. Getty, 190 Crofton Park Road, S.E. Kitchen ranges and domestic fireplaces with hot-water boilers.

12,409. May 20, 1914.—E. J. Lane, 23 Gascoyne Road, South Hackney. Carpenters' chisels.

13,481. June 2, 1914.—Henry Desrumaux, 35 rue de Neuville, Paris. Filters.

14,375. June 15, 1914.—A. M. Bowley and F. A. Norris, 11 & 12 St. Andrew's Hill, Queen Victoria Street. Collapsible ladders, light staircases and the like.

16,363. July 9, 1914.—Gerald St. John Day, Mump's Electrical Works, Oldham, Lancs. Electric-lamp holders.

17,033. July 17, 1914.—A. W. Beuttell, 109 Victoria Street, Westminster, and A. W. Beuttell, Ltd., 109 Victoria Street, Westminster. Lighting device for illuminating purposes.

18,501. Aug. 10, 1914.—Chas. Tomsett, 47 Queen Street, Broadwater Road, Worthing. Hot-water or heating boilers.

20,476. Oct. 3, 1914.—Evered & Co., Ltd., Surrey Works, Smethwick, Staffs, and M. W. Nicholas, 52 Summer Lane, Birmingham. Shelf-supporting brackets and other like brackets.

21,725. Nov. 11, 1914.—Thos. Quinlan, 19 Broadhurst Gardens, South Hampstead, N.W., and Samuel Diggle, 84 Angell Road, Brixton, S.W. Water-closet seat guards.

21,787. Oct. 30, 1914.—Alf. Sinding-Larsen, Vestre Aker, near Christiania, and Ragnar Boyesen, 46 Oskarsgate, Christiania. Decorative building material and process for making same.

23,266. Nov. 30, 1914.—R. C. Sayer, 11 Clyde Road, Redland, Bristol. Sluices, valves, taps and the like.

23,555. Dec. 4, 1914.—C. P. Lawson, Brocton, Chautauqua, New York, U.S.A. Combined incandescent electric lamp and reflector.

24,279. Dec. 18, 1914.—Jacob Stanley, 38 Chancery Lane, W.C. Fire extinguishers.

1,219. Jan. 25, 1915 (dated Feb. 11, 1914).—W. R. Green, 3,635 Lake Avenue, Chicago. Lamp shades.

1,441. Jan. 29, 1915.—W. J. Randall, 77 Somerville Road, St. Andrew's, Bristol. Preparation of oil paints.

14,386. June 15, 1914.—Dated under International Convention July 14, 1913. B. J. Brownjohn, Culwulla Chambers, Castlereagh Street, Sydney, N.S.W. Casement hinges.

24,153. Oct. 24, 1913.—A. A. Cantin, 251 West 89th Street, New York, U.S.A. Column capitals, architraves and arches, and the like.

29,175. May 7, 1914.—James Russell, 40 Coniga Road, Parsons Green, Fulham, S.W. Crushing apparatus.

7,198. March 21, 1914.—Fourness Manufacturing Company, Ltd., Pritchard Street, Charles Street, Manchester, and James Martin, 26 Manley Street, Higher Broughton, Manchester. Geysers or water heaters.

8,228. April 1, 1914.—William McBride, of No. 1, and Joseph Ford, of 5 Osborn Road, Sparkbrook, Birmingham. Hinges.

9,493. April 16, 1914.—V. G. Crittall and the Crittall Manufacturing Company, Ltd., Braintree, Essex. Windows and casements.

Any of the above specifications may be obtained from J. D. Roots & Co.

SIR THOMAS M. DEANE has received from the King and Queen the following message of sympathy on the death of his son, Second-Lieutenant Thomas A. D. Deane, R.M.L.I., killed in action at the Dardanelles: "The King and Queen deeply regret the loss you and the Navy have sustained by the death of your son in the service of his country. Their Majesties truly sympathise with you in your sorrow. —Private Secretary, Buckingham Palace."

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NEW CATALOGUES.

IT is very comforting to know that a British company which was carrying out important work a century and a half ago is in the present year of grace as alert as though it had a reputation still to make. At any rate, the Carron Company need not fear comparison with any international rival—not even the youngest. Thus we find it requires a ninety-page revised edition of their catalogue to set forth their electric cooking and heating appliances. The company are now specialising in this most important branch of their business, and have considerably improved their plant. It is sufficient to say they state that the appliances are soundly constructed throughout, and in keeping with the Carron reputation. The goods range from domestic milk-heaters and irons to large ranges.

MESSRS. BRYANT & SONS, LTD., 42 Queen Anne Road, St. Philip's, Bristol, have sent us a copy of their latest illustrated price-list of ventilators and those allied appliances for which they are specialists. It shows a large number of different types of roof and inlet ventilators, and claims that they have the largest possible area of outlet, possess unequalled extracting power, and are absolutely free from downdraught, wind, and rain. It is scarcely necessary to say that any architect who wishes for his buildings to be a complete success should take care to ensure that these mechanical details are the best possible. Messrs. Bryant & Sons have carried out numerous contracts, and boast that their ventilators are of the highest grade of manufacture.

MESSRS. ASHWELL & NESBIT, LTD., in addition to their reputation for general work as warming, ventilating, and domestic engineers, have for many years been known for their specialities in the utilisation of exhaust steam and vapour from steam traps. Where the water is hard the firm recommend the "Nuconomiser" open-type system, for which they have now held the licence for some four years. This economical apparatus has been designed to get over the objections to heaters of the closed-tubular type, and is made in various sizes. In the course of a test carried out at their Leicester works, it was found that one "Nuconomiser" is of ample capacity under even average conditions to heat the feed water for a boiler evaporating approximately 6,000 lb. of water per hour; the No. 2 size can deal with 10,000 lb. in the same period. The resultant coal-saving is considerable, and the feed water is increased to a very high temperature. For places where waters are extremely hard Messrs. Ashwell & Nesbit have a combined heater-softener, which is completely automatic in operation. Particulars of the system are given in a pamphlet published by the firm, whose registered office and works is at Barkby Lane, Leicester.

FROM Messrs. A. P. Lundberg & Sons, 477-89 Liverpool Road, Islington, N. (suppliers by royal warrant to H.M. the King) comes a copy of the new and enlarged (third) edition of their pamphlet on "The Teaching of Electric-light Switching." This aims at extending and systematising the teaching of what is at present a very much ignored and yet most useful branch of everyday electrical application. The opinions of prominent professors and teachers (at the beginning and end of the pamphlet) are clear evidence that the contents are of no little account. The pamphlet is sent post free to all who are concerned with the instruction of the subject.

THE "Austral" Window Balance Company, Ltd., 3 Macdonald's Lane, Corporation Street, Manchester, set forth in their latest booklet a very clear and admirably illustrated explanation of their patent "Austral" window, and its advantages for use in hospitals, sanatoria, &c. They are well justified in giving prominence to the tribute paid them by Mr. W. A. Pite, F.R.I.B.A., in his recent paper before the R.I.B.A. on King's College Hospital, for in this building 1,700 of the windows have been fixed. Another powerful argument in their favour is afforded by the long list of other hospitals where the fitting has been introduced.

IN less than a hundred small-size pages Messrs. Drew-Bear, Perks & Co., Ltd., manage to convey a vast amount of scientific data about steel construction in general, and their own connection with it in particular. They have succeeded in their endeavour "to put before engineers, architects, and other prospective clients a set of compact and handy tables comprising the properties, safe loads, &c., on a variety of sections of steel joists, girders, stanchions, columns, &c., also some sheets of useful memoranda as to weights and measurements." The load tables, with two exceptions, are calculated in accordance with the requirements of London's Steel Skeleton Amendment Act of 1909. By means of photographs at the end of the booklet, an excellent impression is given of the many important contracts carried out by this firm—some of them in exceptionally quick time. Their Battersea Steel Works at Wellington Road, S.W., are fitted for rapid and economical delivery.

"A WORD TO ARCHITECTS" is the title of a four-page leaflet issued by the Sturtevant Engineering Company, Ltd., explanatory of their new system of vacuum cleaning for modern buildings. This is based on the Sturtevant turbine principle, which is briefly that satisfactory cleaning depends upon the volume and speed of the air rushing in at the cleaning tool, and that vacuum is only the means of producing the necessary flow of air. The leaflet gives a lucid account of the process, and includes views of the Register House, Edinburgh, the British-American Tobacco Company's new office in London, and the offices of Messrs. Spicer Bros. in New Bridge Street, E.C., for all of which the system has been selected.

VARIETIES.

PROFESSOR FLINDERS PETRIE'S annual exhibition will open on June 7 and be held as usual at University College, Gower Street (open for a month). As there has been no work done, of course, this winter, the exhibition will consist of the permanent objects of the college museum.

MESSRS. J. LYONS & Co., the caterers, having outgrown the accommodation of the Maison Lyons in Oxford Street, W., have acquired a large contiguous site, partly freehold and partly leasehold, upon which suitable premises will be erected in due course.

THE Barry Public Works Committee on Tuesday considered plans which had been submitted by the Welsh Town Planning Trusts, Ltd., for 104 houses proposed to be erected at the entrance to Porthkerry Park in connection with their local garden-suburb scheme. The plans were approved.

MR. W. LOVELL MASON, F.R.I.B.A., broke his neck on the 28th ult. in a motor-cycle accident at Ambleside when in trying to avoid a restive horse his machine skidded and crashed into a wall. Mr. Mason, who was well-known in the Lake District as an architect and land agent, was about fifty years old, and leaves a widow, two sons (both on active service), and one daughter.

THE R.I.B.A. Council, in the exercise of the powers conferred on them by Clause 2 of the Supplemental Charter, 1909, has elected to the Fellowship of the Royal Institute Mr. Frank Darling, of the firm of Messrs. Darling & Pearson, Imperial Bank Building, Toronto. Mr. Darling, it will be remembered, is the Royal Gold Medallist elect for the current year, and it is expected that he will be present in person at the Presentation on June 21.

"PREMIER MATIN" (1906) is generally accepted as the most notable piece of sculpture in this year's Royal Academy. Additional interest is added to it by the fact that it is the work of a Belgian sculptor, M. Egide Rombaux. Members of the Royal Academy have shown their recognition of its merits by arranging for its purchase. They have collected £600, and now appeal to the public for an additional £200 to complete this satisfactory transaction.

THE Bishop of Manchester writes as follows in the *Manchester Diocesan Magazine* for June: "It has been intimated to me that the Dean and Chapter propose to erect a new episcopal throne or seat in the Cathedral as a memorial to Bishop Moorhouse. The project has my most hearty approval. The present throne is quite unworthy of the beautiful woodcarving which is the glory of our choir. It has also threatened to come down on the head of the occupant, but that threat has, happily, been averted. Quite apart from the question of security, a new throne has long been needed."

AN important exhibition of Whistler's works was opened on June 1 (Tuesday) at the Galleries of Messrs. Colnaghi & Obach, 144-46 New Bond Street. The display consists of pictures in oil, pastels, and drawings, and should prove of exceptional interest, as it is the first exhibition to be opened since the "Memorial" of 1905. Thanks to the generosity of the collector, the proceeds are to be given to the Professional Classes War Relief Council.

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THE Dunlop Rubber Company have purchased 71½ acres of ground near Bromford from the Birmingham Tame and Rea District Drainage Board as a site for important new works. Some few houses will be built on Wood Lane, but for the housing of the many hundreds of employees required the company are purchasing part of the Birches Green Estate from the City Council, and there propose to erect a large number of houses and cottages.

MR. THOMAS GROOM BARKER, of Eccles, and of Messrs. Barker, Ellis & Jones, architects, 20 Cooper Street, Manchester, died on March 6, aged eighty-five years, leaving property of the gross value of £14,912, with net personalty £10,634. The testator leaves the whole of his property in trust to pay the income thereof to his sister for life. On her decease various bequests have to be made, and then he leaves one-half of the residue to the Society of Architects for general purposes and one-half to the Victoria University towards the endowment fund of the Chair of Architecture.

A MEMORIAL to the late Mr. Charles Jones, M.I.C.E., for fifty years engineer and surveyor of Ealing, has been erected in Ealing Town Hall. The central feature is a circular bronze plaque containing a full-face bust of the late surveyor in semi-relief. Beneath the bust is the Ealing coat-of-arms, with its motto, "*Respice, Prospice*," to which has been appended "*Circumspice*." The panel is the work of Mr. Frank Bowcher, of Bedford Park. A children's ward has been added to the Ealing Hospital as a further memorial to the late Borough Surveyor.

AT the monthly meeting of Bridlington Town Council it was moved that a tender amounting to £6,332 be accepted for the erection of a refuse destructor adjoining the electricity works, and that the committee be empowered to engage counsel and expert witnesses to assist in preparing a case for the Council against any opposition likely to be raised. An amendment against the employment of counsel and witnesses as being unnecessary was defeated by a large majority, and the resolution accepting the tender, subject to the sanction of the Local Government Board, was carried by a large majority.

THE City of Sheffield Education Committee announce that the "Alfred Chadburn" Silversmiths' and Sheffield Manufacture Prizes, value £9 each, are open to competition by persons residing within the city of Sheffield, or who are employed or studying therein. The subjects for competition are: (*a*) Design for a table-centre suitable for presentation to the Cutlers' Company; (*b*) design for a lectern suitable for a fifteenth-century church. All designs to be delivered at the Education Office, Leopold Street, not later than September 6, 1915. Further particulars may be obtained from the Education Office.

A COMMITTEE, comprising leading citizens throughout Scotland, hopes to complete arrangements for the erection of several garden cities in Scotland. The objects are to provide adequate arrangements for the future maintenance and comfort of Scottish veterans who return from the war totally or partially permanently disabled, and who are unable to earn their livelihood. The arrangements are now well advanced, and the committee have several suitable sites on offer. Plans of cottages are now under their consideration. The honorary treasurer is Mr. David A. Fairley, C.A., 2 Castle Street, Edinburgh.

THE Gas Light and Coke Company have given yet another instance of their alertness and foresight by opening experimental and demonstration shops at their City depôt, 146 Goswell Road, E.C. With most of us "seeing is believing," and here any manufacturer who is debating on the advisability of using coal gas as a fuel in factory or workshop can go in order to make his decision after tests have been carried out by himself or his representatives. There are set up for that purpose a great variety of boilers, crucibles, furnaces, muffles, ovens, blow-pipes, and other gas-heated appliances suitable for an almost infinite variety of industrial processes. These are available for experiments under working conditions, and should prove more efficacious in winning converts than even the best-written literature. Incidentally we may mention that the lighting illustrates three different systems—viz., high pressure, self-intensified (low pressure), and ordinary low pressure.

AT the annual meeting of the Surveyors' Institution, held in London on Monday last, Mr. John Henry Hanson, M.I.C.E., senior partner in the firm of Messrs. Abbey & Hanson, land agents and valuers, of Huddersfield, was installed as President for the ensuing year. He is the second North of England member upon whom the honour has been conferred since the institution was established in 1868. Mr. Hanson was born in Huddersfield in 1851. He was articled to the late Mr. John H. Abbey, land agent and surveyor, of that town, who, in addition to having a large private practice, was a former engineer to the Huddersfield Corporation. Mr. Hanson was the Borough Surveyor ot Barnsley from 1878 to 1880, when he succeeded to the practice of his late principal, and has since practised in Huddersfield.

THE Dean and Chapter of York are about to have the great organ in the Minster thoroughly cleaned and improved. The improvements include the addition of a tuba stop on 25 inches of wind, the raising of the wind pressure of some of the great reeds, new mixture stops to the great organ, and the re-voicing of the great organ flue-work. The work has been entrusted to Messrs. Harrison & Harrison, of Durham and London. It is understood the Cathedral authorities at York were influenced in their decision to have the work done at the present time by the fact that there is considerable distress in the organ-building industry owing to the war.

A LITTLE book in crown quarto will shortly be published by the proprietors of "Country Life," 20 Tavistock Street, Covent Garden, W.C., at the price of one shilling, dealing with the "Open-air Treatment of the Wounded." The author is Dr. Shipley, the Master of Christ's College, Cambridge, and the illustrations are from photographs taken at the First Eastern General Hospital, Cambridge. Dr. Souttar, the author of the best medical work on the war, contributes a letter relating his interesting experiences at the Belgian front, where it was found that the open air had a most salutary effect upon wounds, and Professor Simpson, the well-known expert on epidemic diseases, a brief history of open-air surgery.

THE Fitzwilliam Museum Extension Syndicate at Cambridge have issued a report to the Senate on the subject of an extension of the museum rendered necessary by the bequest of the Marlay collection. The site known as Grove Lodge, adjoining the existing museum on the south, has been purchased from the Master and Fellows of Peterhouse, and the Syndicate, while primarily concerned with the Marlay extension, have borne in mind the future architectural development of the whole site. They recognise the importance of "adding to the Fitzwilliam Museum in such a way as to interfere as little as possible with the effect of a building which in its particular style is counted among the most successful architectural achievements of the nineteenth century." The Syndicate have consulted Messrs. Smith & Brewer, architects, who have prepared a set of plans and drawings of the proposed building. It is proposed that the extension should be so planned as to form part of a future quadrangular court, and that it should consist of a block of galleries, exhibition rooms, and service rooms, two storeys high, about 170 feet long and 30 feet wide. The Marlay extension would be connected with the Fitzwilliam Museum by a low gallery.

THE Roll of Honour giving casualties amongst the Expeditionary Force recently includes the name of Lieut. Harry Byng, 2nd Border Regiment, who died from wounds at Festubert, at the age of twenty-six. Lieut. Byng was the third son of the late Gustav Byng (founder and late chairman of the General Electric Co., Ltd.), and received his general education at Harrow, where he became captain of the school gymnasium eight, monitor and head of his house, and a member of the Harrow Association Football team. After leaving Harrow he joined Faraday House, winning the silver medal in his year. He then went to Harvard University, where he was distinguished by his brilliancy, passing all his examinations with honours, and his extraordinary popularity. He acted as captain of their Association football eleven. Shortly after he joined the General Electric Co., Schenectady, as a pupil. He returned to England to prepare for a position of responsibility here in the parent company. But a week after the outbreak of war he enlisted in the Artists' Rifles, and went to France with them in September. Returning home in March on five days' leave he married an American lady, and also was gazetted to the 2nd Border Regiment. Concerning his untimely death his commanding officer wrote: "Mr. Byng was wounded whilst most gallantly leading his platoon in action on May 16. He was universally popular in the regiment. He had done very good work reconnoitring the enemy's trenches, and his loss is very great to the battalion." The adjutant of his regiment stated that he fell "actually on the enemy's trenches. He lay quite uncomplaining, and would not allow any of his men to carry him back because of the danger to their lives."

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, June 11.

Royal Sanitary Institute : Provincial Sessional Meeting at Bristol. Discussion on "The Co-ordination of Military and Civil Sanitary Services in War Time," to be opened by Dr. D. S. Davies, medical officer of health, Bristol, at 11 A.M.

Saturday, June 12.

Institution of Municipal and County Engineers : Meeting at Matlock.

Monday, June 14.

Guildhall Exhibition of Allies' Pictures : Opening Ceremony, at 3 P.M.

Saturday, June 19.

Edinburgh Architectural Association : Visit to Melville Castle, Laswade.

Shakespeare Reading Society : Visit to the Tower of London.

Monday, June 21.

Royal Institute of British Architects : Presentation of the Royal Gold Medal, at 8.30 P.M.

Royal Institute of the Architects of Ireland : General Meeting.

AIR RAIDS AND FIRE PRECAUTIONS.

As we are, in all probability, only at the beginning of enemy attacks by way of the air, which may be expected to increase in number and intensity when the crews and commanders of Zeppelin airships have gained experience in handling their craft and their weapons and in finding their way about, it is of considerable importance that those who are to be attacked should be prepared to meet the danger. This will be, as far as the individual citizen is concerned, principally that of fire, though poison-gas and high explosives are possible weapons of enemy aircraft. In any air-attack on a large scale, such as may follow the reconnoitring raids that we have experienced up to the present, it is highly probable that our established fire brigades will have more work on their hands than they can cope with, and the individual citizen should therefore be prepared to do something for himself and his household.

Every householder should provide himself with a copy of the freely issued Warning No. 17*a* of the British Fire Prevention Committee* and study it carefully, but we may deal more fully with some of the points therein summarised. The first precaution to be taken is to arrange for fire quarters and fire drill, or, in more ordinary language, to instruct everyone in the house what to do if a fire occurs. Panic is the result of an unforeseen and unmeasured danger, and is to be guarded against at all costs. If everyone knows what to do and has practised doing it, panic will be avoided. In many of our elementary schools fire drill has become so familiar to the scholars that even the infants can be, and have been even in real emergencies, got out of the building in a remarkably short space of time without panic and without alarm.

The organisation of a fire drill has to deal with two points—escape and extinction—and the best means of effecting these should be considered beforehand, not left until the emergency arises, when the unexpected and unforeseen may well upset the coolest head. Alternative means of escape must be planned. The staircase may be on fire, the ground floor full of smoke. Other exits must therefore be available and negotiable. In arranging fire drill the organiser should assume that a fire has started at some definite point and arrange his procedure to deal with that circumstance. The procedure for various contingencies should be considered in turn, until all that the imagination of the organiser can conceive have been anticipated.

Closely connected with the problem of escape is the provision to be made for minimising the danger from smoke, fumes, or poison-gas. Not only have we the ordinary smoke from burning material to deal with, but the fumes of the incendiary bombs up to the present used by the enemy are very pungent and there is the possibility that the threatened use of poison-gas bombs may in the future materialise. It is practically universally true that, however heavy the smoke, gas or fumes may be, the clearest or least heavily charged atmosphere is near the floor, and crawling, or, better still, rolling, is the best method of progress through smoke. Rolling, by the way, is often effectual in extinguishing an incipient firing of clothing. Then some form of respirator should be provided. A smoke-helmet is the most effective, but costly and cumbersome. Then there are now on sale many forms of respirators made of gauze and cotton-wool or similar materials charged with chemicals. One may pay high prices for these, but it is not necessary to do so. An ordinary linen pocket-handkerchief, soaked in a solution of the photographer's friend, "hypo," and cooking—bicarbonate of—soda, and tied on as a bandage covering mouth and nostrils, is quite effective. In default of bicarbonate, ordinary washing soda will answer fairly well. The important point to remember about all smoke-respirators is that they must be used wet.

We may now proceed to consider the question of fire-extinction. The first thing to do is to turn off the gas at the meter or electric current at the main switch. Particularly in explosions, fire is often caused or spread by the escape of gas or electric current from broken pipes or wires. Prompt use of first-aid appliances is the next essential. Many a fire can be extinguished with a bucket of water in the first five minutes which would require the services of a division call from the fire brigade if given half an hour's start. The fires started by the incendiary bombs at present used by Zeppelins require, however, more than one bucket of water. They are filled with thermit, a compound of aluminium and iron oxide, embedded in resinous matter surrounded by inflammable rope. The thermit becomes on ignition a mass of molten metal, with a temperature of 5,000° Fahr.; the resinous material developes a pungent smoke. Cold water, and plenty of it, promptly and vigorously applied will, however, quench the incipient fire from these incendiary bombs. The prudent householder will therefore have a sufficient number of buckets of water, ready at hand on each floor; an ordinary domestic two-gallon pail, four-fifths filled, is all that is needed as a fire-bucket. At night time the bath and copper may wisely be kept filled with water. Hand-pumps usefully supplement the work of water-buckets, or, shall we say, work well in conjunction with them, the pump for application, the buckets for supply.

Chemical extinguishers are practically useless as a defence against the attack of Zeppelin bombs. Their capacity is small and they cannot be immediately refilled

* **Reproduced in *The Architect and Contract Reporter* advertisement columns on May 28.**

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as can a water-bucket. They are, moreover, likely to get out of order, and at their best require skilful use by a cool head and steady hand. Glass hand grenades and powder extinguishers may as a class be ruled entirely out of court. As we have already said, cold water and plenty of it is by far the most effective weapon of extinction. Buckets of sand have their special advantage when petrol, paraffin, or other oil is alight, but otherwise must give second place to water-buckets.

Precautionary measures that should be adopted are the closing of windows and of shutters and doors on the receipt of warning of an air raid, for bombs may be dropped outside the house and their fumes are best excluded. Oil lamps should be extinguished and removed out of the way of danger, into a cellar or basement if such exists, or even into the outer air. Fires should be extinguished. Households should remain indoors, for shells from anti-aircraft guns must fall somewhere and may do as much personal injury as the missiles from aircraft.

The provision for first-aid in the event of burns to person should include picric acid lint or gauze—if obtainable, which is doubtful nowadays, as the picric acid is an ingredient of high explosives—cotton wool, bicarbonate of soda, in a warm solution of which the injured part should be plunged. Olive and other vegetable oils are also useful.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

THE studies of an eighteenth-century doorway which we have received are on the whole fairly satisfactory in quality, though the number is less than we should like to have seen.

"Harley" has chosen one of the many examples to be found in London, No. 5 Great George Street, Westminster, where the Doric order with pediment encloses the door with semi-circular fanlight over. "Harley's" work is thorough, though his draughtsmanship has not yet reached high-water mark.

"Spotus" shows us a variation of the same motif as illustrated by "Harley," taken from a house in College Road, Dulwich. This is inferior in treatment of detail to the Westminster example, nor has our contributor done his work as thoroughly.

Mr. Bright Fraser has measured and drawn an interesting doorway from Bolton, Lancs., in which the designer has magnified a small door by means of a big surround, which is rather out of scale with the actual opening. The subject is well drawn, but might have been rather more fully detailed.

"Improver" sends a fine example from Jesmond Manor House, Newcastle-on-Tyne, which is an interesting and good design, though failing somewhat in the carving, either from the execution or the draughtsmanship.

We award prizes of one guinea each to Mr. Bright Fraser and "Improver."

The present month (June) will, we regret, close the current series of our monthly competitions, which we shall hope to resume when the war is over.

NOTES AND COMMENTS.

IT is gratifying to know that the statues of English sovereigns which formerly stood in Westminster Hall have at length found a resting-place. They are those of James I., Charles I., Charles II., Mary II., William III., George IV., and William IV. Their great height, 11 ft. 9 in., and weight have prevented their acceptance by the Corporation of the City of London for housing in the Guildhall or the Royal Exchange, two suggested locales. The loan of the statues in perpetuity by the Office of Works has been accepted by the Corporation, and it has been decided by the City Lands Committee, which has control of the Old Bailey Sessions House, that they should be placed there. The statues will accordingly be erected in the spacious entrance hall of the Sessions House. One—that of King Charles I.—has already been placed in position. It is in a slightly damaged state, a portion of the sword hilt and part of the sceptre being absent.

In view of the bitter lessons from Rheims and other seats of famous architectural treasures in the war area, the authorities at Milan are removing all the stained glass from the Cathedral in view of possible Austrian air raids. Workmen are now engaged in taking out the glass. Should not our owh authorities and custodians of ancient treasures follow the example? Zeppelin raids, we now know, are a reality in England, and the destruction of material property is as much their aim as any military advantage.

A year ago a very eminent man said: "If I am remembered, I expect to be spoken of as one who lived in the time the Liverpool Cathedral was built." Our period will now be identified by a more terrible mark, but the erection of the Cathedral by the age which waged the war, and its steady progress during the struggle (so far as the absence of workmen of serviceable age will permit) will illustrate the spirit in which the fight was undertaken and the character of the people who made such sacrifices for international justice. At the normal rate of progress the first portion of the building would be complete within two years, but the war has unfortunately interfered with the payment to the Committee of certain funds which were expected, and unless special efforts are made, it is feared the work must stop for lack of money. Tremendous as are the demands that are being made upon our people in consequence of the war, the Liverpool Diocese must remember that the Cathedral is a pledge given by present faith to future generations, and the Building Committee ought to be able to rely upon the knowledge that funds for this supreme task will be forthcoming. To this end donations, or promises redeemable within three years, for a sum of £44,000 must shortly be received. If friends of the Cathedral scheme cannot give now, they may pledge their financial aid within two or three years, and the Committee may proceed with reasonable confidence. It is hoped that the amount will be promised so that the opening of the great building at the time intended may celebrate an honourable peace.

The opposition to the removal of Glasgow's Tolbooth Steeple grows in volume. At the annual meeting of the Faculty of Procurators Mr. J. T. T. Brown explained that a number of the public bodies in the city had been putting pressure on the Corporation to induce them not to remove the old Tolbooth Steeple, which was closely connected with the history of Glasgow. He moved—"That this meeting of the Faculty of Procurators in Glasgow learns with regret that the Corporation has resolved to remove the Cross Steeple from its ancient site, and earnestly urges the necessity of rescinding the resolution and the reconsideration of the whole matter."

Mr. David Murray, LL.D., seconded the motion, and explained that the Faculty had an interest in the old Tolbooth, as they used at one time to meet there, and the members practised before the Burgh Court held there.

The resolution was unanimously adopted, and the clerk was instructed to communicate it to the Corporation, and to state that a deputation consisting of the Dean, Mr. J. T. T. Brown, Mr. David Murray, LL.D., and the clerk would wait upon the Corporation if desired to explain the Faculty's views on the subject.

The Grand Antiquity Society of Glasgow at its annual meeting decided to make representations to Glasgow Corporation on the importance of maintaining the Tolbooth Steeple on its present site as a unique monument of the historic and literary past of Glasgow. The Corporation will also be asked to receive a deputation from the society on the subject.

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Councillor Dr. William Gemmell brought the question of the removal of the Steeple before the meeting, and moved the following resolution: "That this society views with apprehension and deep regret the proposal to remove the Tolbooth Steeple, and respectfully represents to the Town Council the importance of maintaining it on its present site as a unique monument of the historic and literary past of Glasgow." Dr. Gemmell said it was his contention and the contention of every archæologist and antiquarian in Scotland that if the Steeple was moved by a single inch from its position the historical and literary associations connected with it would be severed for ever. It was said by those who favoured the removal of the Steeple that it was an obstruction to traffic. Only two vehicles, he said, passed the Steeple per minute, and only ten or eleven people passed through the opening in the Steeple per minute. He submitted that the whole cry for the removal of the Steeple on the ground of congestion of traffic was a gross overstatement of the case, and that any congestion could easily be removed by moving the tramway stopping station further up the street. It had been argued that the Steeple was rotten, and that if it was not pulled down it would fall down. He said it must be evident to anyone who had any knowledge of architecture and of building that there was no insuperable obstacle to the underpinning and support of the Steeple. The proposal to remove the Steeple had received the support which had been accorded to it in the Town Council simply because a large proportion of the great majority of the Town Council had no sentimental or historical connection with the city. These members came from all the shires of Scotland, and their connection with Glasgow was due to the accident of business or of residence. These gentlemen were good governors so far as the city was concerned in matters of finance, but Old Glasgow made no appeal to them. A society like the Grand Antiquity Society had a far better gauge of the spirit that animated Glasgow and its citizens than had the Town Council which governed the city. The society had a real reason for bringing pressure to bear on the Town Council, which was a body that could be impressed, and was willing to be impressed, if it was convinced of the united mind of the citizens.

The Trades House of Glasgow resolved to protest against the decision of the Town Council to take down the Tolbooth Steeple and to re-erect it on a site at the junction of Gallowgate and London Street.

The subject was raised by the Deacon of the Weavers' Incorporation, Mr. William George Black, LL.D., who invited the House to consider whether at this moment there was not a serious impropriety in the Town Council resolving to remove one of the few remaining antiquities of Glasgow. The Tolbooth Steeple was associated with many historical events. It was known to every citizen, young and old, rich or poor, and it was one of only three such steeples or towers now remaining. We were not rich in historical buildings in Glasgow, and it would be a great misfortune if we were to lose any more of them. It might be asked why a stronger protest was not made before the resolution was come to by the Town Council. That could be easily answered. He submitted that the citizens of Glasgow, for reasons honourable to themselves and to the Town Council, had so much confidence in the good sense of the Town Council that they never believed for one moment that the proposal would be carried. They were told, as they were told in the case of the Tron, that the steeple was not in good repair. If that was the case, the fault, he was afraid, lay with the Town Council, because they had been its conservators for many years past. He submitted that the steeple was not beyond repair—it had not been proved to be beyond repair—and that any proposal to take down the steeple and put it on another site was not one that seriously recommended itself to those who desired the continuance of local traditions. He submitted that the Trades House would be discharging a public service worthy of all its great traditions of the past if it were to pass a resolution in something like the following terms: "That the House protests against the demolition of the Tolbooth Steeple, one of the few remaining historical monuments of Glasgow, and remits to the platform to frame a fitting protest and to transmit it to the Town Council."

At a meeting of the Dunshaughlin Rural District Council a circular letter was read from the Local Government Board, dated May 31, stating they had been in communication with the Lords Commissioners of His Majesty's Treasury respecting the making of further advances by the Irish Land Commission for the purposes of Labourers Acts, and that it had been decided that during the continuance of the war such advances must be strictly confined to what is necessary for completing cottages in course of construction, or for which contractors' bonds have been perfected, and for the erection of cottages where it can be shown that they are absolutely required to replace occupied labourers' dwellings, which have been or may be condemned by medical authority as unfit for human habitation. In this connection, three classes of cases present themselves for consideration:—(1) Where an improvement scheme has been confirmed and the loan already sanctioned. In such instances further instalments of the loans sanctioned will be issued from time to time in respect of the building of cottages already in hands or at present contracted for, and cottages for which the local authority can satisfy the Board that an urgent necessity exists for their erection to replace occupied and condemned labourers' dwellings in cases where the occupants cannot otherwise be provided for. No contracts are to be entered into after the receipt of this communication in respect of any other cottages included in the scheme. (2) Where an improvement scheme has been confirmed and the requisite loan has not yet been sanctioned. In these cases the Board cannot at present entertain applications for sanction to loans for the purposes of schemes except in regard to cottages proposed to be built in lieu of condemned dwellings, as mentioned in the foregoing paragraph. (3) Where an improvement scheme has been submitted for approval, but has not yet been confirmed. In such cases only the portion of the scheme providing for the replacement of labourers' dwellings established to be unfit for human habitation will be proceeded with for the present, leaving the remaining portion of the scheme to be subsequently dealt with.

Similarly, as regards cases in which Rural District Councils may have received representations with the view of their making new schemes, the Councils should suspend further proceedings, except in those cases where they are satisfied that the labourers occupying condemned dwellings cannot be provided with proper house accommodation without the building of new cottages.

ILLUSTRATIONS.

LLOYDS BANK, ST. JAMES'S, LONDON, S.W.

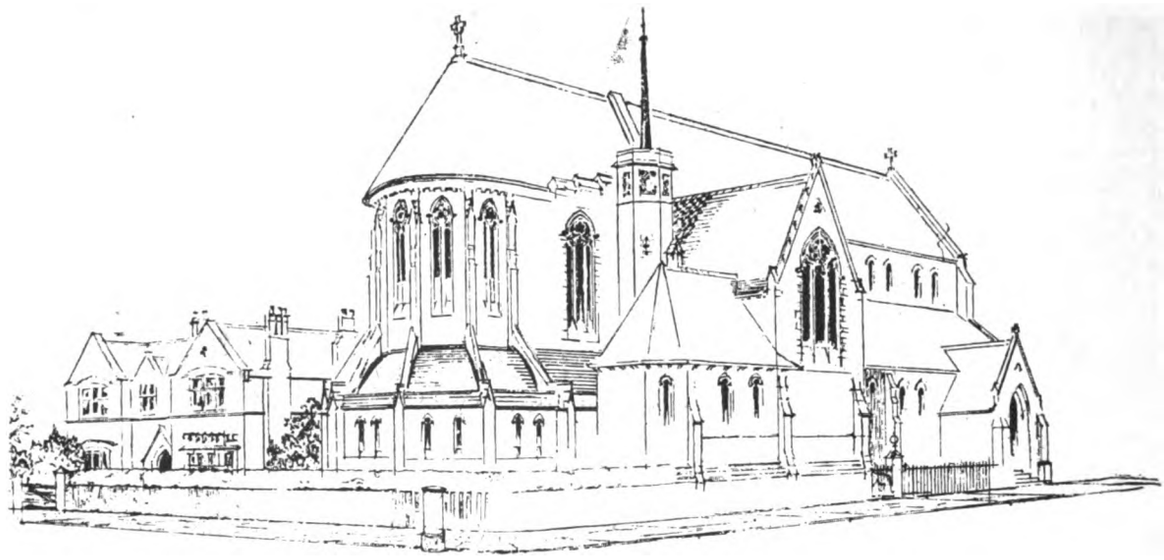
IN the Architectural Room of the Royal Academy may be seen the complete design prepared by Messrs. F. Waller & Son for the rebuilding by the Crown authorities of the block from King Street to Ryder Street, and from St. James's Street to Bury Street. Our illustrations show the portion already carried out, and which is occupied by Lloyds Bank, Ltd. The materials employed externally are Portland stone with Westmorland green slates. The vestibules and banking-hall are treated in marble and bronze, with teak doors and fittings. The entrance doors and banking-hall windows are of bronze.

Messrs. Trollope & Colls were the general contractors under Messrs. Waller & Son, the architects.

ROOD SCREEN, CHURCH OF ST. SAVIOUR, ST. ALBANS

THE church of St. Saviour, St. Albans, was for a number of years the headquarters of the staff of the Mission of

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ST. PAUL'S CHURCH, KINGSTON HILL, FROM N.E.—Mr. FRANK PECK, Architect.

the St. Albans Diocese, and it had long been the desire of the then Vicar, the Rev. H. D. Burton, and the five assistant Mission clergy to see "the rood" erected therein.

A modern church, of great and noble proportions, the interior is faced with red brickwork with some stone dressings, the massive pillars of the nave and other arcades being also of red brick with attached brick shafts; consequently the introduction of "the rood" has brought a religious and a sobering atmosphere into the church such as no other feature could have produced.

In erecting a supporting screen under the rood, there is the danger of masking the view of the altar, which would be undesirable where the ritual of the Church of England is so completely performed as in this church, and therefore the substance of the material of the screen supports was kept as light as possible, the openings made wide and the centre especially so (this being carefully gauged on the spot to clear the outline of the great altar), and the trefoil arched head resulted together with the opportunity of introducing the symbolical features of the two pelicans and their young.

The screen is of Austrian oak slightly toned and waxed, 22 feet 6 inches long between the piers, 16 feet 3 inches high from nave floor to the top of the cresting, and 28 feet 6 inches to the top of the cross.

The figures are carved out of American white wood and stand out white against the dark chancel behind; the "Christus" is 4 feet 9 inches, and the two attendant figures are about 4 feet 1 inch and 4 feet 3 inches long respectively, and all were modelled and carved in Messrs. Martyn & Co.'s shop at Cheltenham by Mr. R. Lindsay Clarke.

The massive and severe oak cross is axed on the face, and shows hand labour.

Mr. Frank Peck, F.R.I.B.A., the architect, drew in detail and supervised the carving and craftsmanship of the screen with the constant endeavour to invest it with the feeling of life and growth in full vigour. The whole fixed complete was the work of Messrs. Martyn & Son, Ltd., of Cheltenham, and the total cost was £327 15*s*., which, together with the fees, was paid by an anonymous donor as a thankoffering.

THE ALTAR AND THE ADORNMENT OF THE LADY CHAPEL, CHURCH OF ST. SAVIOUR, ST. ALBANS.

THIS work is a triple memorial to the late Henry Frank, Bishop of Colchester, and two others.

The Altar.—The enclosing frame and the delicately traceried ends are made of ebonised mahogany and ebony. The top is the previous marble slab, and the altar frontal is polished metal, the centre being a large silver panel representing in *repoussée* "The Adoration of the Magi," which is inserted in an exceptionally fine sheet of hammered golden bronze relieved by a number of bold bosses (suggesting burning suns) which mostly bear symbolical figures or "attributes"; for instance, in the first row are the dove, the globe and serpent, the morning star, and the Agnus Dei; in the second row are the closed book, the lily, the tower of David, the open book—the Book of Wisdom, chap. vii.; in the bottom row, the spinning wheel and St. Cecilia's organ.

At the foot of the frontal on each side are two lions—lions of Judah—and rising behind them to form the framework on each side are the cedars of Lebanon, in ebony, to which clings, in the bronze, the stem of the vine arched over the frontal and bearing clusters of grapes, the far-reaching roots of the same being worked out in conventional design to form the lower border.

The tabernacle is finely carved and traceried in oak inlaid with silver, and is partly gilded with 22 carat gold, being domed over in hammered silver, and it supports an ebony crucifix which stands out from the niche behind, which is painted to form a background of shaded blue and gilded with rays to form a "glory" to crown the Calvary.

The altar steps are dove-coloured marble, and the footpace and sanctuary floor are choice marbles selected for their colour—white dividing slips, green panels, and some blood-red centres.

The super-altar and chapel arcading are carried out in Austrian wainscot oak relieved or "flashed" with gold as judged to be appropriate after being fixed in position. These carvings are also meant to be symbolical, representing "attributes." The panels may some day be painted, the friezes and other work gilded, and stages of sculptured figures introduced in the canopied niches.

The following craftsmen were employed to carry out the architect's details: Messrs. John Daymond & Son, of Edward Street, Vauxhall Bridge Road, S.W., made and fixed the oak super-altar and arcading, the tabernacle work and crucifix, and the woodwork of the altar frame; Mr. Bainbridge Reynolds, the silver work on the tabernacle; Mr. Robert Hitch, the colour and gilding; Messrs. Farmer & Brindley, the marble steps and floor; Messrs. Waltham & Hill, the bronze and silver altar frontal and the electric-light brackets on each side not shown on the photographs, which were designed by the architect, being based on the form of the lily plant.

Mr. Frank Peck, F.R.I.B.A., the architect, devoted no inconsiderable amount of time and thought to this work, and anyone who views it in *situ* will recognise the fruit of this in a way which is impossible to gauge from a photograph.

THE FORECOURT GATES, CHIRK CASTLE, DENBIGHSHIRE.

THIS magnificent example of English smithery was the work of local smiths, two brothers of the name of Roberts, who completed the central gates and piers in 1719 for Sir Robert Myddleton at a cost of £190 1*s*. 6*d*. This appears to have been their first work of importance, and they are supposed to have worked under Tijou, possibly at Drayton. The wickets and railings at side were added in 1888.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A BUSINESS meeting of the Royal Institute was held on Monday last, the 7th inst., at Conduit Street, W.

The following results of the annual election for the Council 1915-16 were announced:—

President.—Mr. Ernest Newton.

Vice-Presidents.—Sir John Burnet, Messrs. John Alfred Gotch, Henry Vaughan Lanchester, and Paul Waterhouse.

Past-Presidents. — Messrs. Reginald Blomfield and Thomas Edward Collcutt.

Honorary Secretary.—Mr. Edward Guy Dawber.

Members of Council.—Professor Stanley Davenport Adshead, Messrs. Walter Cave, Henry Philip Burke Downing, William Curtis Green, Henry Thomas Hare, Emanuel Vincent Harris, Gerald Callcott Horsley, John James Joass, Arthur Keen, David Barclay Niven, Alexander Nisbet Paterson, Andrew Noble Prentice, Harry Redfern, Albert Edward Richardson, Edwin Alfred Rickards, William Gillbee Scott, Herbert Duncan Searles-Wood, and Percy Scott Worthington.

Associate Members of Council.—Messrs. Horace Cubitt, William Robert Davidge, Leonard Rome Guthrie, Herbert Shepherd, Philip Edward Webb, and Herbert Arthur Welch.

Representatives of Allied Societies.—Messrs. Graham Clifford Awdry (Bristol Society of Architects), Robert Burns Dick (Northern Architectural Association), Frank Brookhouse Dunkerley (Manchester Society of Architects), Charles Kempson (Leicester and Leicestershire Society of Architects), Adam Francis Watson (Sheffield Society of Architects), and John Watson (Glasgow Institute of Architects).

Representative of the Architectural Association.—Mr. Herbert Austen Hall.

Hon. Auditors. — Messrs. Robert Stephen Ayling, F.R.I.B.A., and Arthur William Sheppard, A.R.I.B.A.

The members elected for the Standing Committees were as follows:—

ARTS STANDING COMMITTEE.

Fellows.—Messrs. Edward Guy Dawber, William Adam Forsyth, John Alfred Gotch, Gerald Callcott Horsley, Arthur Keen, Henry Vaughan Lanchester, Halsey Ricardo, Giles Gilbert Scott, Henry Heathcote Statham, and Edward Prioleau Warren.

Associates.—Messrs. Robert Atkinson, Hubert Springford East, Leonard Rome Guthrie, Basil Oliver, Alfred Wyatt Papworth, and Philip Edward Webb.

LITERATURE STANDING COMMITTEE.

Fellows.—Messrs. Arthur Thomas Bolton, David Theodore Fyfe, Andrew Noble Prentice, George Halford Fellowes Prynne, Albert Edward Richardson, Edwin Alfred Rickards, Charles Sydney Spooner, Arthur Stratton, Charles Harrison Townsend, and Paul Waterhouse.

Associates.—Messrs. Martin Shaw Briggs, William James Davies, Herbert Passmore, Stanley Churchill Ramsey, Walter Lewis Spiers, and William Henry Ward.

PRACTICE STANDING COMMITTEE.

Fellows.—Messrs. William Henry Atkin-Berry, Max Clarke, Herbert Osborn Cresswell, Alfred William Stephens Cross, Matt. Garbutt, Edward Greenop, George Hubbard, David Barclay Niven, Herbert Duncan Searles-Wood, and Alfred Saxon Snell.

Associates.—Messrs. Horace William Cubitt, Percival Maurice Fraser, Edwin Gunn, Henry Albert Saul, John Douglas Scott, and Herbert Shepherd.

SCIENCE STANDING COMMITTEE.

Fellows.—Messrs. Harry Percy Adams, Robert Stephen Ayling, Horace Cheston, Allan Ovenden Collard, Alfred Conder, William Edward Vernon Crompton, Bernard Dicksee, Frederic Richard Farrow, Charles Stanley Peach, and Professor Ravenscroft Elsey Smith.

Associates.—Messrs. Robert John Angel, Henry William Burrows, William Robert Davidge, George Leonard Elkington, Digby Lewis Solomon, and Ernest William Malpas Wonnacott.

R.I.B.A. PROBLEMS IN DESIGN.

THE designs submitted under Subject XX. will be on view in the Gallery of the R.I.B.A. next Monday, Tuesday, and Wednesday, the 14th, 15th, and 16th inst. inclusive, between the hours of 10 A.M. and 8 P.M.

COMPETITION NEWS.

YORK.—At a meeting of the York City Council on the 7th inst., Mr. Sharp, chairman of the Streets and Buildings Committee, in moving the adoption of the minutes, said the sanction of the Local Government Board had been obtained to the preparation of a town planning scheme in respect to three areas. They had instructed the City Engineer to take steps in connection with the competition for the prize offered by the late Dr. Tempest Anderson, and other prizes offered by the Committee for the best town planning scheme for the three areas, with observations on the remaining areas in and around the city. The report was adopted.

ST. BARTHOLOMEW THE GREAT.

By J. TAVENOR PERRY.

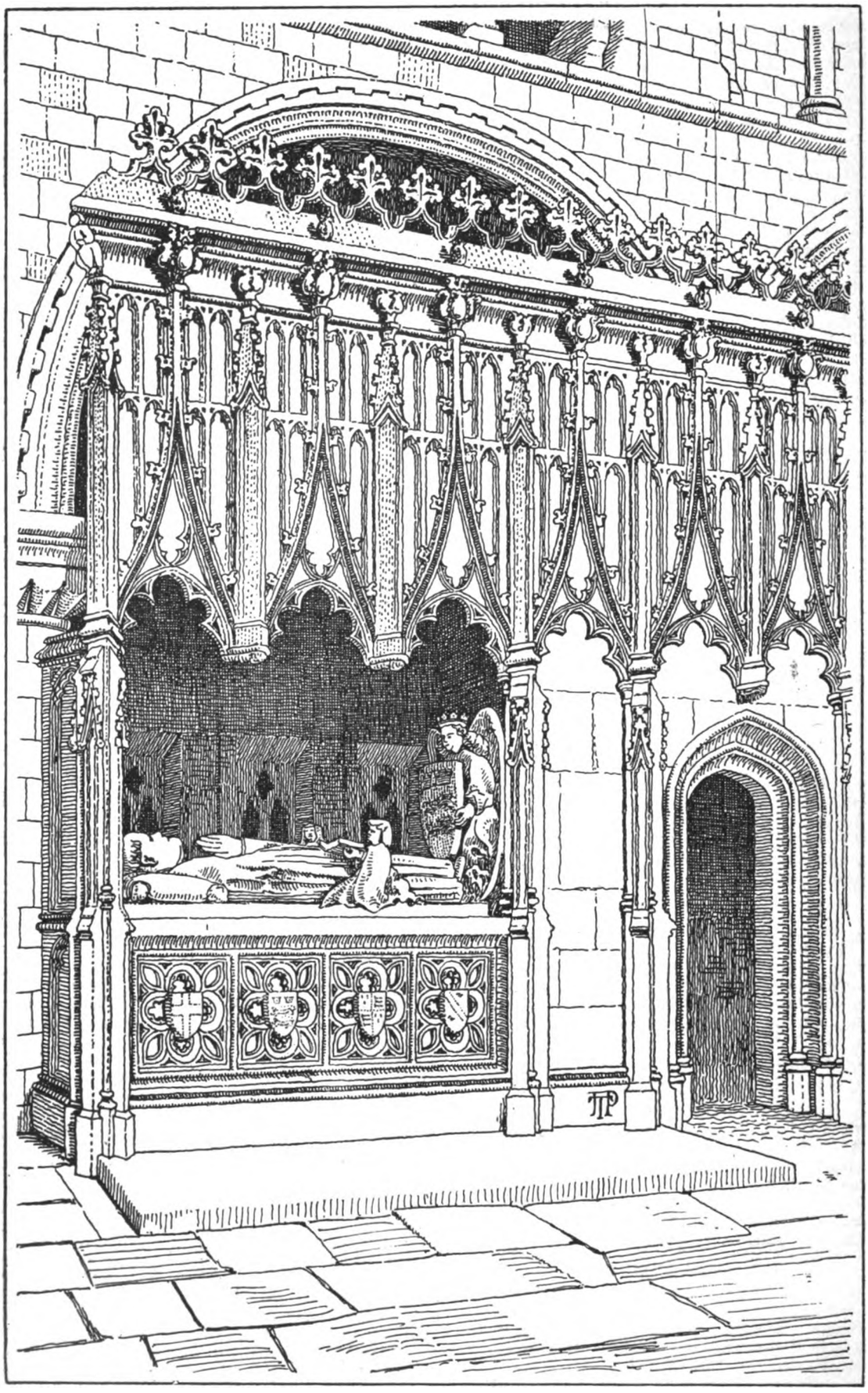
THE inauguration by the Lord Bishop of London of the new choir vestry on the 9th instant marks an epoch in the restoration of this ancient church, seriously began more than fifty years ago; and it is worth while now to recall some incidents of that period which started the work on a wholly wrong theory, leading to the disastrous destruction of much beautiful work that can never be replaced, and to the production of a sham Norman apsidal church on the site of a choir that, from the very first, was square-ended in the usual English fashion. In making so sweeping an assertion I must justify my position. I myself made the original drawings, now deposited, fortunately, in the Library of the Victoria and Albert Museum, taking most of the original dimensions, and accompanying Mr. J. H. Parker in all his explorations into the fabric; and it is upon the information thus obtained that his lecture of July 13, 1863, was delivered. The general facts of the history had been already gathered together by Hayter Lewis and embodied in his report of April 1863 to the Rector and Churchwardens, and it was as his pupil that I was put into the position I have mentioned.

From the commencement all the elements of doubt as to whether the apse was ever completed or not were present in the minds of its restorers and are referred to in Parker's reprint of his speech; nevertheless, these doubts were thrown to the winds, and it was decided that, as there ought to have been an apse there should be one, and the first contract, taken by Messrs. Dove Bros., included for the building of the two central or easternmost piers of the apse. There were a great many difficulties in the commencement of the work, which afford at least an excuse for the mistakes, and as these circumstances are forgotten, and perhaps quite unknown to many, it is as well to recall them.

Down to 1863 there stood across the apse, a little to the east of the chord, a massive wall of uncertain date and construction, which, rising to the roof of the church, formed its main east wall, and was pierced above by two round-headed Georgian-looking windows. Behind this wall was a large dark space, called Purgatory, enclosed with walls, also of uncertain date, built roughly on the line an apse might have been expected to follow, except that all the centre part was straight. Above this space and extending over the eastern ambulatory and lady chapel was a fringe factory which, at that time, the church authorities were unable to acquire. There were thus two initial difficulties presented to any attempt to restore the apse. The first was that no proper examination of the foundations could be made until Purgatory and its enclosing walls were cleared away; and the second was that only the lower part of the main east wall could in any case be removed, as the upper part had to be maintained in its position of "party wall" to the fringe factory. Though working thus in the dark, the first contract was entered into, which included the reconstruction of the apse and other almost equally disastrous works to which I shall refer later on. The preliminary works led to two important discoveries, either of which ought to have stayed our hands for a further consideration of the apse theory; but a builder's contract is too sacred a thing to be lightly tampered with.

In pulling down the lower part of the east wall it was found to be of rough rubble stonework containing a great many fragments of Norman and transitional carving, including two beautiful capitals which are, I believe, preserved, and *no identifiable work of later date.* This circumstance pointed to the fact that the wall was an early one, and not much later in date than the abandoned apse. Had the fringe factory been in hand and the works commenced by pulling down the end from the top, the discovery made later by Sir Aston Webb of the beautiful

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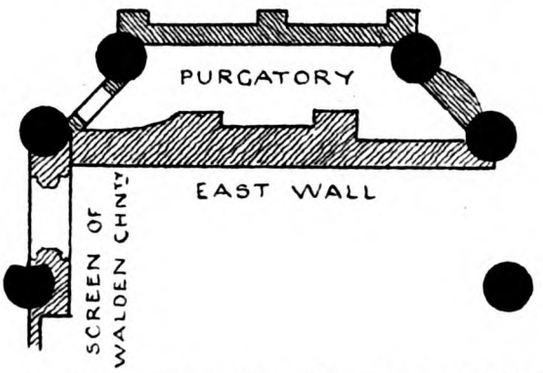
RAHERE'S EFFIGY AND THE CHANTRY OF BISHOP RALPH DE WALDEN.

traceried windows (now preserved in the north triforium) of the upper part of the wall, might have satisfied the then restorers that they were on the wrong course. But I will return to this directly. On removing the enclosing walls of Purgatory, which were of reddish brickwork, to open up foundations for the new apse columns, excavations were commenced, and almost the first spadeful of earth taken out disclosed the fact that we were dealing with undisturbed virgin soil, and that the thin bed of peat which extends over the site had never been broken through. So far from finding the foundations of the old piers, we discovered that there had never been any; but the builder's contract included for the new ones, and the work went on.

Another matter included in this first contract which led to almost as disastrous results was the reckless lowering of the floor level so as fully to expose the bases of all the

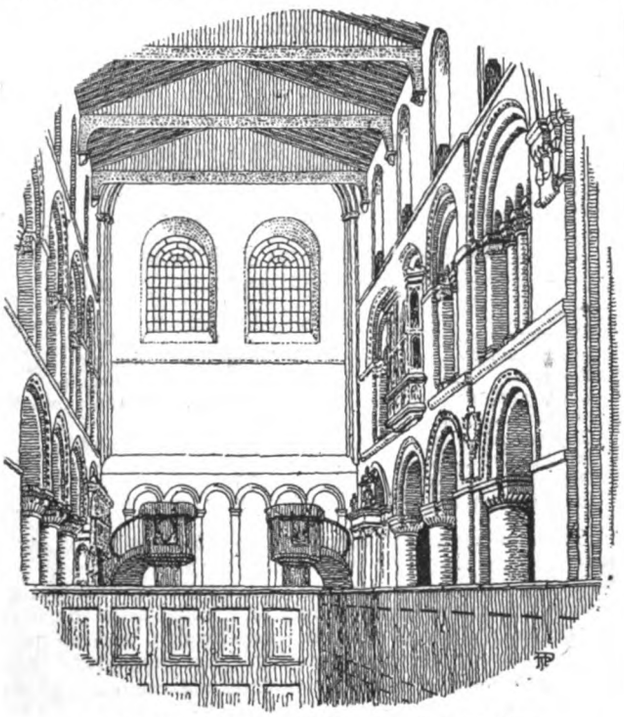
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Norman piers; some 3 feet of earth containing, doubtless, traces of the foundations of later screens, altars, &c., being taken away. The argument adduced in favour of this course was that it added to the exceeding dampness with which the church was afflicted; but the sentimental idea of exposing the Norman work was the ruling motive. This necessitated a tampering with the celebrated Rahere monument, and the screen of what I consider to have been the chantry of Ralph de Walden, the man who was Archbishop of Canterbury before he became Bishop of London. The



PLAN OF EAST WALL AND PURGATORY DESTROYED IN 1863.

monument now appears to be hoisted up upon a deep plinth, though it stands at its original level, the pavement on which it was originally placed having been cut away from it. Two bays of the screen towards the east which abutted on the destroyed east wall were also removed altogether, including the contained doorway into the chantry; and with this destruction vanished the evidences of the return of the screen on to the face of the east wall as a reredos.



ST. BARTHOLOMEW THE GREAT, LONDON. THE EAST END IN 1863.

It may be mentioned in reference to the reredos, which may have only been defaced at the time of the Reformation, that it was probably hacked back to the surface of the wall in the eighteenth century, when a vast oaken reredos was set up (engravings of this remain), to be pulled down again in 1828, and superseded by a Norman arcading in Roman cement which lasted until 1863.

It must be borne in mind that all this unfortunate work was completed before Sir Aston Webb, who has so successfully adapted the building to its present purposes and made a silk purse out of a sow's ear, appeared upon the scene; and it is a misfortune that every penny expended on the building goes to make more ineffacable the initial blunder of the restoration.

ASPHALTE AND ITS APPLICATION IN SANITARY WORK.*

By NANDY HOSKINS (Chairman of Council).

THE subject of asphalte and bitumen has been so much discussed recently in the technical Press that I almost owe an apology for not allowing the matter to rest. I ask to be excused, however, on the grounds that they have not been fully treated with relation to their use in sanitary work in particular, and the nature of the materials under various conditions is not fully understood.

The sanitary engineer is a man of many parts, and in saying this I do not distinguish too closely between the municipal and the sanitary engineer or the architect. He is called upon to advise and design for all classes of undertakings that may benefit the community, and is frequently perplexed as to what material may best meet the requirements in special cases.

Nomenclature.—The subject cannot be even superficially treated without first differentiating between asphalte and bitumen, their allied compounds and their substitutes.

Many of the terms used are very loosely applied, and it is hoped that the "Glossary of Road Terms" recently compiled by Mr. H. Percy Boulnois will be the means of bringing about an understanding among manufacturers and users of these important materials.

It is a common practice for the "man in the street" to speak of tar paving as asphalte, or, may be, *ashfelt*; and it is not only "the man in the street." The author was once conducting an examination in a large provincial town where a candidate specified six inches of asphalte for a footpath. On pointing out to him that asphalte was far too expensive to be so lavish with, he said that he "ought to know," as part of his daily duty was to superintend the laying of the stuff for the borough council. Thinking that the council may have discovered a mine in the vicinity, the candidate was asked where the asphalte was obtained, and he replied that the Council made their own from broken stone and tar.

Without claiming originality or attempting to criticise the publication just referred to, the following interpretations are intended to apply to this Paper:—

Asphalte.—A general term applying to any and every description of asphalte or crude bitumen.

Rock Asphalte.—Lime stone or sand stone naturally impregnated with bitumen.

Lake Asphalte.—Crude bitumen.

Compressed Asphalte.—Pulverised rock asphalte heated and consolidated under pressure.

Mastic Asphalte.—A preparation of rock asphalte and additional bitumen, with or without an admixture of coarse sand or grit.

Artificial Asphalte.—A mixture of pulverised limestone and grit made plastic with bitumen.

Bitumen.—A mixture of hydrocarbons in a solid or viscous state which are wholly soluble in carbon bisulphide and almost insoluble in alcohol.

Maltha.—Crude bitumen in a semi-fluid condition.

Pitch.—The residuum from the distillation of coal tar, wood tar, &c.

Bituminous Mastic.—Any mixture composed of pulverised stone or grit made plastic with or containing pitch or tar products.

Historical.—The earliest reference to asphalte is to be found in the Bible, where we may read (Gen. vi. 14) that God commanded Noah to make an ark of gopher wood and "pitch it within and without with pitch."

We may, I think, safely presume that the practice of distilling tar from coal or wood was at that period unknown, and the "pitch" used was the natural product of the "slime" pits, such as was employed at a later period in the building of the Tower of Babel, where "they had brick for stone and slime for mortar" (Gen. xi. 3).

We have evidence also of bitumen being largely used as a cementing material in the building of ancient Nineveh. Mr. Loftus, who examined the ruins of the Temple of Warka or Bowariyeh in 1854, states that the massive buttresses at the four corners were of kiln-dried bricks cemented together with bitumen in thick layers. There is every evidence, therefore, that asphalte has been used for building purposes for more than 3,500 years.

Origin of Bitumen.—Many theories have been advanced as to the origin of bitumen in nature. It is so closely allied

* A Paper read at Caxton Hall before a meeting of the Institute of Sanitary Engineers, Mr. H. Percy Boulnois (Past President) in the chair.

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to petroleum in composition that the formation of one cannot be considered without reference to the other.

Parkes' Chemical Catechism states "naphtha is as fluid and transparent as water; but when exposed to the air it becomes yellow, and then brown; its consistence is increased, and it passes into *petroleum*. Petroleum is found native in many countries, and by an exposure to the air becomes *mineral tar*. Mineral tar is also found native which by exposure to the air passes into *mineral pitch* and *maltha*. By further induration this passes into *asphaltum*, which substance is likewise found native in many parts of the world."

It will be seen, therefore, that to arrive at the formation of bitumen and asphalte we must first consider the origin of naphtha.

The word naphtha is derived from the Persian "*nafta*," to oust out, but in this country the word is usually confined to a distillation from coal tar or wood tar; it is sometimes used, however, for one of the fractions of petroleum.

Petroleum (from Latin *petra*, rock, and *oleum*, oil) occurs in enormous quantities in some very ancient rocks (Silurian and Carboniferous), and also in much later deposits (early Tertiary), and it is evident from its chemical composition that it is of organic origin. Accumulations of vegetable and animal organic matter which under certain conditions would have resulted in peat and finally coal have, as the result of peculiar circumstances, passed through various stages of decomposition by the influence of what has become known as "marsh gas" and been converted into a liquid.

Principal Deposits of Bitumen.—The island of Trinidad, B.W.I., is noted for the most remarkable deposit. Here in the S.W. portion of the island is the famous "Pitch lake," so named by Sir Walter Raleigh, who discovered it in 1595. He noted that the lake contained "abundance of stone pitch, that all the shippes of the world might therewith be laden from thence, and we made trial of it in trimming our shippes, to be most excellent good and melteth not with the sun as the pitch of Norway."

The lake has many peculiarities. It covers about 100 acres, is roughly circular in shape, probably occupying the crater of an extinct volcano, and is of unknown depth. In 1893 an attempt was made to determine its depth at the centre by boring, but after sinking to a depth of 135 feet the tubes had inclined to such an angle that the attempt had to be abandoned. There are several islands having rich vegetation in, or, rather, on, the lake; these, owing to the motion of the "pitch," are continually changing their position.

Quoting from Charles Kingsley's description of the lake in his interesting book "A Christmas in the West Indies," he says: "Conceive a crowd of mushrooms, of all shapes, from ten to fifty feet across, close together, side by side, their tops being kept at exactly the same level, their rounded rims being squeezed tight against each other; then conceive water poured on them so as to fill the parting seams, and in the wet season, during which we visited it, to overflow the tops somewhat, thus would each mushroom represent, tolerably well, one of the innumerable flat asphalt bosses, which seem to have sprung up each from a separate centre, while the parting seams would be of much the same shape as those in the asphalt, broad and shallow atop, and rolling downward in a smooth curve, till they are at bottom mere cracks, from two to ten feet deep. Messrs. Wall and Sawkins explain the odd fact clearly and simply. The oil, they say, which the asphalt contains when it rises first evaporates in the sun, of course, most on the outside of the heap, leaving a tough coat of asphalt, which has, generally, no power to unite with the corresponding coat of the next mass. Meanwhile, Mr. Manross, an American gentleman, who has written a very clever and interesting account of the lake, seems to have been so far deceived by the curved and squeezed edges of these masses that he attributes to each of them a revolving motion and supposes that the material is continually passing from the centre to the edges, when it 'rolls under' and rises again in the middle. Certainly the strange stuff looks, at the first glance, as if it were behaving in this way; and certainly, also, his theory would explain the appearance of sticks and logs in the pitch. They are often several feet in length, and five or six inches in diameter. On reaching the surface they generally assume an upright position, one end being detained in the pitch, while the other is elevated by the lifting of the middle. They may be seen at frequent intervals over the lake, standing up to the height of two or even three feet. They look like stumps of trees protruding through the pitch, but their parvenu character is curiously betrayed by a ragged cap of pitch which invariably covers the top, and hangs down like hounds' ears on either side."

The lake has been worked under a concession granted by the British Government for some twenty-seven years, during which period some millions of tons of the material have been exported; the bulk of it going to the United States, but large quantities being shipped to this country by Messrs. Previte & Co., of London.

The crude material is dug from the surface of the lake, and although several tons may be removed in a single day, within thirty-six hours the excavations are said to refill by the exertion of the natural pressure from below. The material is taken in iron skips to an aerial railway which conveys it to the sea, some 800 yards distant for shipping.

Asphalte is also found beyond the boundary of the lake, especially between the lake and the sea. This is termed land asphalte. It is questionable how it got there, but the supposition is that the lake at some early date overflowed its banks. Although the physical properties of the asphalte varies considerably, even in the lake itself, as may be seen by the specimens exhibited, the chemical composition is extremely uniform.

Before the crude asphalte can pass to any of the many uses for which it may be intended, it must undergo a process of refining, as it contains some 30 per cent. of water besides organic matters which it is necessary to eliminate. This is usually done in tanks about 15 feet deep filled with coils of 1¼-in. pipes about 6 in. apart. The coils carry steam at 100 lb. pressure, corresponding to a temperature of about 325 deg. Fahr. At this temperature the asphalte, which is liquid, is run into casks, and is known as epuré. In this condition it is ready to be converted by the addition of a flux into what is called for trade purposes "Refined Trinidad Lake bitumen."

Another extensive deposit of lake asphalte is that at Venezuela. This covers a superficial area of some 1,000 acres, but is very shallow compared with the Trinidad lake. It varies in consistency in different parts of the lake from viscous maltha to solid bitumen. The crude material is richer in bitumen than that of Trinidad, but the composition of the refined bitumens is not identical in each.

Deposits are also found in Cuba and other parts of the world.

Rock Asphalte.—Rock asphalte is entirely different both physically and chemically from lake asphalte; in fact, the only thing common to each is that they both contain bitumen. The following is a comparison:

Diversities of Lake and Rock Asphaltes.

	Trinidad Lake. (Dry.)	Rock. (Sevssel.)
Specific gravity	1·4	2·25
Hardness	plastic	tough
Inflammability	inflammable	fire-resisting
Fracture	conchoidal	rough
Melting point	170° F.	(disintegrates)
Bitumen content	54	8
Calcium carbonate	—	91
Sulphur	3	—
Mineral matter (silica) ...	35	—
Organic matter	8	—

Rock asphalte is correctly described as a limestone naturally impregnated with from 6 to 14 per cent. of bitumen, which gives it a rich brown colour. When the bitumen is extracted by means of a solvent the limestone is left in a state of very fine sub-division, and we might consider briefly how the stone became impregnated.

Few rocks vary more in texture and composition than limestone; it may be a friable chalk-like deposit, a finely-grained rock resembling sand stone, or a hard, close-grained mass having a conchoidal fracture. In rock asphalte we have an example of a finely-grained deposit, the particles being cemented together, as it were, with what would first appear a foreign matter. The deposits are found in various thicknesses, 6 feet and less to over 20 feet, and are at times laminated. The existence of laminæ indicates tranquil conditions of intermittent deposit, and such thin layers occur only where the mineral is fine-grained, as in mud or shale. The alternation of thin bands of laminated rock with others non-laminated indicates considerable oscillation of currents from various quarters bearing different quantities and qualities of sediment.

The conditions favourable to the formation, or rather to the impregnation of limestone with bitumen are the diffusion of organic material either vegetable or animal, through the finely-divided calcareous deposit and the exclusion of air from the material undergoing decomposition.

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There is reason to believe that no more heat was required than that afforded by the process of fermentation to bring about the changes by the aid of anaerobic bacteria. It is probable that the organic matter was in the form of delicate water plants together with abundant infusorial or microscopic vegetable life. That the unimpregnated laminæ should exist between the impregnated rock is conclusive proof that the bitumen-forming agents must have been entombed in the lime deposit, and that the impregnation was not brought about by external influence, as is sometimes suggested.

Principal Deposits of Rock Asphalte.—Rock asphalte appears to have been discovered in the Val de Travers, Switzerland, by a workman named Jost, who brought it to the notice of a Greek physician named Eyrinis in 1712, and he was granted a concession by the King of Prussia to work the rock.

However, the credit is, I believe, due to Count Sassenay for starting the asphalte industry on business lines, and correcting mistakes made by Eyrinis, mentioned hereafter. In 1802 Count Sassenay secured the concession of the Seyssel Mine, and carefully investigated the properties of the rock and trained his workmen in the proper methods of using it.

The principal deposits on the Continent which are used in this country are found at Val de Travers (Switzerland), Limmer and Vorwohle (Germany), Pyrimont, Seyssel (France), Ragusa (Sicily).

The rock is quarried or mined according to whether the seam is near or far below the surface of the ground. As previously stated, the seams vary in thickness; they also vary considerably in texture and composition, even from the same quarry.

Mastic Asphalte.—Mastic asphalte is a mechanical mixture made by intimately compounding powdered rock asphalte with additional bitumen and with or without an admixture of coarse grit.

Dr. Eyrinis appears to have conceived the idea of using mastic asphalte for building purposes. In a work published by him in 1721, he describes its preparation in the following terms: "The stone is taken just as it comes from the mine and heated a little so that it can be ground to a coarse powder. A little pitch is added to it so that it will fuse the more readily and also cause the entire mass to become thinner, and then the whole is heated over a moderate coal fire.

"The wood or stone upon which the cement is to be spread must have been previously well dried and also heated a little. When using the cement upon stone, the present custom has been to add one part of pitch to ten parts of the asphalte. For use with wood rather more pitch must be added. When, however, marine work is being put in hand, it will be necessary to supervise the workmen with the greatest care in order that their work shall be as may be best suited for the particular purpose, though it will suffice for the present to add that the asphalte in question becomes softer and more liquid the more it is heated. In carrying out the fusing of the asphalte, however, it is always necessary to add a little pitch. This fusing should be carried out in a copper cauldron containing the exact quantity of asphalte that may be required for the work then being put in hand.

"The pitch must be melted first, then the asphalte added little by little, the mixture being continuously stirred throughout with a stick or shovel, until both materials have become intimately mixed together. Resin makes it harder and causes it to withstand the heat of the sun better. Dutch pitch, obtained from the roots of trees, makes it tougher. The mixture must consist of one part of pitch (*i.e.*, common pitch) and eight or nine parts of asphalte, according as to whether it is desired to make it more or less liquid—depending upon the nature of the work to be done—and before it is quite cool this cement can be levelled or brought to a smooth surface by means of a hot iron, such as is used by builders for cement work. Above everything else, the workman must take care that the stone or other material to be coated shall be thoroughly cleaned before the cement is laid upon it, and then if any weakness is found afterwards in the work, it cannot be occasioned by the material used, but only by the kind of use and the method adopted in the spreading of it."

As may be imagined, Dr. Eyrinis's method was not successful, the cause of failure evidently being due to the unsuitable material used as a flux, and, let it be stated, that the cause of dissatisfaction in mastic asphalte work to-day is largely due to the same cause. Substitutes for bitumen, such as gas, tar, pitch, and petroleum refuse, have a deleterious effect on rock mastic asphalte, and should never be used.

The process of manufacture of mastic asphalte, as carried out by one or more well-known firms, and may for our purpose be accepted as the method generally adopted, is to first crush the natural rock to pieces about the size of walnuts. After passing through the crusher the asphalte is carried up by elevators to a disintegrator which runs at a high speed, grinding the material to a fine powder. The powder is then cooked in specially-made cauldrons, worked by agitators with certain proportions of bitumen, and when heated to a temperature of about 400 deg. Fah., a proportion of from 10 to 20 per cent. of fine grit is added to make gritted mastic, and which is thoroughly incorporated with the asphalte by the rotary working of the agitators. It is then turned out into iron moulds and made into blocks of various shapes weighing about ½ cwt. each.

To apply the mastic, these cakes are broken into small pieces and carefully placed in a cauldron with just sufficient bitumen as a flux. It is then heated to a temperature of about 280 deg. Fah., the whole being carefully stirred until properly cooked. When ready it is taken from the cauldron with an iron bucket and spread by means of hand floats to the required thickness and rubbed with fine sand. As the mastic is likely to have blow-holes, it is important that it should be applied in two coats where required for damp-proofing.

Tests for Asphalte.—The following tests are such as may be applied by an engineer or architect, but it is pointed out that special apparatus, as also an intimate knowledge of analytical chemistry, is necessary to determine the exact composition of the materials we are now considering. Much useful information on this subject is contained in "Natural Rock Asphaltes and Bitumen," by Arthur Danby, who has kindly permitted the author to cull some of the following tests:—

A simple method to adopt in order to tell one artificial bitumen from another consists in holding the product over an open flame and smelling the vapours which are given off. The residues from coal tar, wood tar, turf tar, or stearin, each of which has its own distinctive odour, is easily noticeable when the material is heated.

A definite test for the presence of coal tar pitch in a suspected material is based on the fact that it contains a quantity of free carbon in contrast with the natural bitumen, which contains none. Natural bitumen presents a uniform brownish appearance when a little is fused on a microscope slide and examined under a microscope. In an adulterated sample the free carbon may be seen suspended in the bituminous matter like small black dots, though to the naked eye the mass appears to be true bitumen.

Mastic should be able to be cut with a knife. If too hard or stony a nature, it proves an insufficiency of bitumen.

When held in a gas flame it should soften, it should never run or begin to ignite. If it burns, the mastic contains too much flux, and for practical purposes the material will prove too soft.

Application of Rock Asphalte.—As a material for paving streets asphalte has much to recommend it from a sanitary point of view. It is non-absorbent, easily cleansed, and suffers no material change from variations of temperature. Its suitability for this purpose was discovered by accident in 1849. Fragments of asphalte dropping from the carts which transported it from the quarry along the road became heated by the sun and were crushed to powder and compacted by the continual passage of the carts until a hard, smooth track was formed. The phenomenon thus presented, followed by many experiments, led to the perfect method of constructing the rock asphalte road now in use.

In 1854 the first street of compressed asphalte was laid in Paris and covered an area of 950 square yards. The first street to be so treated in London was Threadneedle Street in 1869.

Rock asphalte may be utilised for road paving either as macadam, compressed powder, or as compressed tiles. As a macadam it would appear not to have been quite satisfactory, judging from the report on the Eltham-Sidcup trial road, but the author constructed an asphalte macadam road several years ago which gave satisfaction.

For compressed work, the rock is prepared by heating the powder in revolving cylinders to a temperature of 280 deg. Fah., and as soon as the moisture has evaporated the heated powder is placed in iron-lined vans and taken to the street where it is to be laid. The powder is then raked over the prepared concrete surface to the thickness required

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and rammed with hot pelons, smoothed to a polished surface, and then rolled with a heavy hand roller. It gradually becomes cold, and in time is compressed into solid rock again by the traffic. The usual thickness of compressed asphalte is 2 in. for heavy and 1½ in. for light traffic.

It is essential that compressed asphalte should be laid on a foundation of good Portland cement concrete about 6 in. thick. Neglect in this respect has been the cause of many failures.

Application of Mastic Asphalte.—Mastic asphalte is a most useful and efficient material, and is eminently suited to meet certain sanitary requirements. It is damp-proof, fire-resisting, vermin-proof, durable, has certain antiseptic properties, and is easily applied by a skilled hand to roofs, floors, walls, and a variety of purposes in engineering and building works.

Damp-proof Courses.—To resist damp no better material exists than asphalte or bitumen properly applied. Clause 20 of the model by-laws issued by the Local Government Board requires that every wall or pier of a new building shall have a proper damp-proof course of sheet lead, asphalte or slates laid in cement or other not less durable material impervious to moisture beneath the level of the lowest floor timbers and at a height of not less than 6 in. above the adjoining ground.

The by-law is quite clear, but the loose method of applying the terms "asphalted" and "bituminous" to felts treated with coal tar products tends to bring the genuine article into disrepute ; so much so that a circular was recently issued to builders by the district surveyors in London stating that "the material commonly known as 'felt damp course,' asphalted felt or similar material will not be approved unless a distinct and sufficient layer of natural asphalte or bitumen is provided in connection therewith."

This cheap substitute for the genuine article cannot be too strongly condemned. No asphalte or bitumen is used in its manufacture, and the fibrous material employed is subject to rapid decay in damp situations.

The author knows of extensive property in London which is in a very unsatisfactory condition owing to this worthless material having been used, and has frequently replaced it in existing buildings with a genuine damp-proof course at great expense to the owners. This, however, is the only remedy.

With respect to the fire-resisting properties of mastic asphalte, much will depend on the quantity of bitumen it contains, the latter material being highly inflammable. It is not only the spread of the fire and the stability of the building that must be considered in case of fire occurring, although these are important factors; but the danger to the firemen employed in its extinction by falling debris. The London Building Act. 1894, Sec. 61. states that the flat, gutter and roof of every building, &c., shall be externally covered with slates, tiles, metal or other incombustible materials. It would appear from a recent circular that the London County Council does not consider asphalte an incombustible material. It should be pointed out, however, that it is far more so than some of the metals, *e.g.*, lead and zinc, which are permitted by the Building Act.

Application of Bitumen Sheeting.—For several years past bitumen sheeting has been used for waterproofing purposes, more particularly for horizontal damp-proof courses, lining of reservoirs, sewage tanks, filter beds, swimming baths, &c., with great success.

The sheeting is manufactured by coating jute cloth on either side with a heavy layer of bitumen. It is made in standard size sheets, each measuring 24 feet by 6 feet, and is about 3-16th inch thick. It has the advantage of being more easily laid than mastic asphalte.

It is not suitable for vertical work unless supported on the outer face. The most satisfactory method of fixing in a vertical position, as in the case of reservoirs, &c., is by the use of special wall ties which are built into both the inner and outer walls.

To fix the material in a horizontal position the sheets should be carefully unrolled and laid over the surface to be covered, due allowance being made for a 3 in. lap at the joints. The sheeting should then be left for a few hours in order that it make take a proper bearing before jointing. A special jointing iron is then heated and carefully passed between the laps to soften the bitumen on the inner surfaces, and these should promptly be united with a wooden mallet.

Causes of Failure in Asphalte Work.—The causes of failure are usually due to either the material used or the method of using it. These may be guarded against to a great extent by entrusting the work to a reputable firm. There are few materials which lend themselves to adulteration more than asphalte, and few which require more careful manipulation. Large quantities of low priced mastic have been imported to this country from Germany and still larger quantities are "faked" here during their preparation and use. The author contends that the work to be done, however small the job may be, should be executed by the firm's own workmen. The mastic blocks should bear the brand of the firm and no other material should be allowed to be mixed with them except the bitumen flux.

The author proposes in conclusion to exhibit a series of lantern slides illustrating the application of asphalte and bitumen to various classes of sanitary work, and wishes to thank those interested in the manufacture and use of the various materials for the assistance they have afforded him in the preparation of this paper.

DURHAM ARCHÆOLOGICAL SOCIETY.

THE annual meeting of the Archæological and Architectural Society of Durham and Northumberland was held last week in the Lecture Room, Palace Green, Durham. The President, the Rev. Dr. W. Greenwell, M.A., F.S.A., F.R.S., was in the chair.

The accounts were presented by Mr. J. G. Gradon, secretary and treasurer. The balance sheet showed that the balance from 1913 was £11 12*s.*, and subscriptions and entrance fees amounted to £51 5*s.* After meeting the year's expenditure, the balance left in hand was £17 7*s.* 1*d.*

It was agreed to have meetings this year in Durham, Newcastle, and Darlington.

The Rev. Dr. Greenwell, in opening his Presidential address, said he desired to confine his remarks that day to Durham Cathedral and one or two other places. They would remember that a few years ago there was a scare about the condition of the Galilee. Naturally the Dean and Chapter were affected to a high degree. Their architect was called in, and reported that the Galilee was in an unsafe condition in many parts. That report did not seem to him (the President) to be at all consistent with the facts. The Galilee appeared to him, plain man that he was, to be in a perfectly safe condition. The Chapter met, and the report was read. What the architect proposed to do would have practically destroyed that very magnificent monument to Pudsey's æsthetic architect. It seemed to him (the President) to be a perfectly stupid thing, because to his mind there was no apprehension that the Galilee was in an unsafe condition. The Chapter called in another expert, and very fortunately the two experts did not agree. What one said the other disputed, and so the Chapter very wisely came to the conclusion that they had better leave well alone, and thus the Galilee had been saved. In this connection he could tell them a rather amusing story as to what occurred on that occasion. A north-west part of the Galilee was said to be in a very unsafe condition, and stones were taken out and subsequently replaced, with, of course, new mortar. But paper was pasted over the place where the stones had been removed, and subsequently a crack was discernible. That was regarded as proof that the building was shrinking. It turned out, however, that the shrinking was simply due to the drying of the new mortar when it had been put in. They would probably think that that was a most absurd thing to have happened, but it actually took place. However, the Galilee had been saved from being really and practically destroyed. Then another report was set afloat, by whom he could not tell, that "the cathedral was in danger." The roof of the nave was said to be in a very precarious condition. the triforium and nave buttresses were said to be in a very bad state, and the tower also in a very hazardous condition. As might be imagined, the Dean and Chapter became very much alarmed, and took the advice of their professional architect, and also of another expert who had been called in to report upon the Galilee. But very fortunately, or rather unfortunately, these two men agreed. Then there was called in a contractor, a very efficient man, who had had a great experience and done a great deal of good work, but, as they knew, contractors were contractors, and this contractor agreed that the building was in a very unsafe condition in several parts, amongst others the rubble work and the groining of the nave. He did not think it was ever con-

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tended that the ribs of the nave were in a very bad condition, but the rubble between the ribs was said to be very unsafe and might come down at any time. The plaster was removed. He himself did not know anything about plaster, but was told there were different kinds, that the plaster used in the Middle Ages contained one kind of hair, and that used in modern times contained another kind of hair. He supposed the plaster used in modern times contained the hair of asses. However, the plaster was said to be modern, and he had no reason to doubt it was modern and exhibited cracks. Hence the question was, Did these cracks correspond with the cracks in the rubble work of the vaulting? It turned out that the cracks in the plaster did not correspond with the cracks in the rubble work, and therefore they had no connection of any kind with them, and there was no proof that there was any shrinking of any kind whatever. The cracks in the rubble work had existed since the cathedral was built. All buildings of the size and weight of Durham Cathedral somewhat settled, and in the cathedral of Durham there were cracks at the west end near the central tower, and in the nave, and all arose from settlements when a building like that had been put up. Hence he did not consider they could think much of these cracks, and there was no sign of any kind whatever of shrinking, apparent or appreciable. Still, they called in two architects, who agreed that the building was in a very unsafe condition, and, as he had said, the Chapter also called in a contractor, who agreed with them. He as President, however, was glad to say that the Chapter, who had had the whole matter before them, had deferred the consideration of the question of the condition of the cathedral until the 19th of the present month, and he was perfectly satisfied that the Dean and Chapter would not take the advice of their architects, but would decide to leave the cathedral as it was now. He (the President) altogether disagreed with the advice that the cathedral was in an unsafe condition. It was a most ludicrous thing what they had been told about the buttresses in the triforium of the choir. The architects told them they were not put in by Carileph, but by Wyatt. The whole thing was perfectly and absolutely ridiculous. Those arches were a very early example of arches supporting a roof, and were unquestionably Carileph's work. However, these architects had declared them to be Wyatt's work. They did not know that Wyatt did anything in the cathedral at all. He did a great deal of mischief outside. To attribute what he had referred to as Wyatt's work seemed to be the most ridiculous and preposterous notion he had ever heard of. Well, one architect proposed to take down these very valuable and interesting semi-circular arches, and replace them by some flying buttresses of his own design. The other architect differed from him. He would build up another arch under the existing one. The whole thing seemed to be so absurd that one wondered how anyone with any knowledge of building could ever think of such a thing. However, so it was, but, as he had said, he believed the Chapter would take steps to prevent any mischief being done, and he (the President) had perfect confidence that what the Chapter proposed to do would be quite satisfactory, and that there was no danger of the cathedral being tampered with. A little too much work had been done already. There was a great amount of scaffolding in the nave which seemed to be unnecessary and a needless expenditure. However, that had been spent, and there was an end to it, but he hoped no money would be spent over the cathedral in such a way, because a time might come when money would be necessary to do some work that was absolutely necessary. Therefore he hoped the Chapter would husband their resources for that purpose. With regard to the castle, they knew the very fine staircase of Bishop Cosin's called the Black Staircase. It was in a very bad condition on account of devastations by worms. It was in a very precarious state, and might have come away at any time. Under the very careful superintendence of Mr. W. T. Jones, architect to the castle, the work of restoring that beautiful staircase had been very carefully and very properly carried out. The worms had been destroyed, and certain portions of wood had been put in which would make that staircase again perfectly stable. He hoped Dr. Gee would find it possible for the University to carry out further repairs to the Black Staircase, and have the work entirely completed. The staircase was quite safe up to a certain point, but a little more expense was required to make it perfectly stable. However, what had been done had been done very well indeed, and very great credit, he thought, attached to Mr. Jones for the extremely careful way in which he had done the whole thing. Mr. Jones had done a really good piece of work.

They were very glad to hear that the Board of Works were prepared to take over Finchale Abbey. A lot of money was wasted there some years ago in putting a fence round the ruins, a fence which was really of no value whatever. If that money had been spent in making the walls secure from damp and replacing the displaced stones, it would have been much better. However, the Board of Works were prepared to take the Abbey over, and he believed the Chapter were willing to make it over to them. They were prepared to spend a considerable amount of money in putting the building into an efficient state. That was to prevent any future water getting into the top of the walls, and replace as many of the stones now lying about in their original positions, and altogether to put the building into a condition that it might be expected to remain for many years to come.

The President said they found a deplorable condition of things in Belgium and in the North of France. It was dreadful to think buildings of the very highest architectural beauty and historical interest had been ruthlessly destroyed by the Germans. Nothing more sad could possibly be imagined. It was terrible to think that the Germans could go and destroy such buildings as they had done for no earthly reason whatever, except to satisfy a perfectly brutal spirit. He remembered the German as a kindly, homely man, but latterly he had been educated by that curse of militarism into being little less than a devil—nay, even worse than a devil. They had hitherto owed a great deal to Germany in regard to science, art, and literature, but the German nation had now actually sunk into a condition worse than that of the very lowest savages. Talk about Attila. Attila was a saint to William II. He had no doubt if the latter had his own way he would destroy every building in Italy and in England—nay, every building of interest in the whole world. He believed this arose through overweening conceit and belief that the Germans could do what other nations could not do, and were prepared to make other nations conform to them.

MAIN ROADS OF THE PAST.*

By FRANK GROVE, M.Inst.M. and Cy.E., Assistant County Surveyor of Surrey.

THE difficulties of satisfactory road construction and maintenance in this country have in recent years reached a very acute stage, which has been brought home with much force to all road engineers and others interested in the work, and in a particularly unpleasant form to the ratepayer who has been called upon to meet the increased cost, the extent of which has caused him no little alarm.

We are told by various writers that the Romans, the greatest roadmakers of ancient times, were noted for the excellence of their roads, which were laid out in straight lines from point to point, often regardless of obstacles which might have been avoided, and have never been excelled in solidity of construction. Their general straightness may perhaps have been due to convenience in setting out or to their being laid out in a line with some prominent landmark. Some of them still remain, forming the foundation of more modern roads. Their general method of construction consisted of a foundation of one or several courses of flat stones laid in mortar, with a surface of pavement blocks laid on concrete and jointed with mortar, and were often three or more feet in thickness. For the small amount of traffic they had to carry their construction would seem to have been unnecessarily substantial. The usual width of the paved portion of the road was about 14 feet, with unpaved ways on both sides about half the width of the paved road and separated from it by raised stone edgings. The surface was sometimes made of hard concrete, pebbles, or flints set in mortar, and sometimes in clay and marl. Where inferior materials were used the surface of the road was made higher and rounder in cross-section.

The Roman roads remained in use down to the Middle Ages, but no regular provision was made for their maintenance, and they gradually fell into disuse. The materials used for their construction were pillaged for building material, and they were in parts ploughed up so that they are now mostly unidentifiable. Although there are no

* Extracts from a Paper read before the Society of Engineers.

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traces of Roman influence in the later roads in England, which are generally more or less tortuous, their straightness appears to have been copied to some extent in France about the beginning of the eighteenth century, when new roads, known as "Routes Nationales" and "Routes Departementales," were constructed by the Government of that country.

During the Middle Ages there was practically no vehicular traffic, and comparatively few new roads were constructed. Those that were made fell far short of the Roman standard, and for the most part cannot now be traced. They were practically dependent upon charitable bequests for their repair, and these bequests, although usual upon specified roads, were sometimes made for the repair of unspecified roads, and generally took the form of gravel or other material for repairs. Guilds largely contributed to the maintenance of the roads, and monasteries and the clergy also assisted.

Many ways were constructed during the Saxon and Norman periods, the most interesting of which were those by which pilgrims travelled to the various shrines throughout the country, traces of which still remain. In Tudor and Stuart times high ways, hollow ways, cause ways, and other ways were made, and took their names from their method of construction, which was very primitive, while they were narrow and, as a whole, badly kept.

In the fourteenth century vehicular traffic was not unknown, but it did not become general until the middle of the sixteenth century, when public road vehicles were first introduced. The roads at that time, however, were most unsuitable for such traffic. Before the end of the sixteenth century coaches became the general means of conveyance among the wealthy classes, and stage coaches appear to have been introduced towards the middle of the seventeenth century. At first there was a great outcry against their introduction, and it was some time before the old method of personal conveyance by saddle-horse became obsolete, and stage wagons were substituted for pack-horses.

At the beginning of the seventeenth century, owing to the increased use of vehicles, the Legislature had to choose between adapting the roads to wheeled traffic or adapting wheeled traffic to the roads. It chose the latter course, with the result that numberless Acts of Parliament were passed restricting the number of horses to be used in carts and wagons, the weights to be carried, and the widths of wheels. The greater the width of tyre the less toll had to be paid, the theory being that broad wheels tended to preserve and consolidate the roads, whereas narrow ones cut them up, thereby increasing the cost of their upkeep. Each parish had to maintain its own roads by statute labour, and this no doubt accounted largely for their bad condition. The road problem was eventually solved by adapting the roads to the traffic by the passing of the Highway Act of 1835, which at one sweep removed most of the restrictions on traffic.

Down to the middle of the eighteenth century the roads then existing were hardly worthy of the name, and were for the most part hilly and tortuous tracks, because low-lying ground was never crossed if it could be avoided. Local taxation was the sole method of raising money for absolutely necessary repairs, and no doubt the standard was a low one. The establishment by law of numerous turnpike trusts, peculiar to this country, enabled gates or barriers to be set up, and tolls levied upon the persons using the roads, the money thus obtained being utilised in their maintenance and improvement. The system was cumbrous and the persons appointed to administer the tolls so incompetent that very little improvement was effected. The turnpike trusts added largely to the number of hilly roads, and no attempt was made to obtain expert advice or skilled labour in the execution of the necessary repairs. Such materials as could be most readily obtained were heaped up on the middle of the roads without any attempt being made to consolidate them. The roads thus became so convex that the only safe place for the traffic was along the centre of the road, and the wheels of vehicles pressing against the sides of the roads caused deep ruts and pushed the materials into the ditches.

This state of affairs existed until the beginning of the nineteenth century, when Telford and Macadam directed their attention to the construction of roads and brought scientific principles and regular system to bear upon their construction and repair. Their methods were very similar, including thorough drainage, the use of properly broken stone, and the adoption of a uniform cross-section of moderate curvature. Angular broken stone was spread evenly over the surface and finer material sprinkled thereon, so that the traffic passing over the road would consolidate the material and form a hard, smooth surface. Telford paid particular attention to the foundation, and his name is associated with a pitched foundation, which he did not always use, and which closely resembled that which had long been in use in France. Macadam, however, disregarded it, contending that the subsoil, however bad, would carry any weight if made dry by drainage and kept dry by an impervious covering. Macadam was chiefly engaged on the repair of old roads, and the improvement which he effected in road management and maintenance was great and lasting. His method of repairing roads became general, and with the addition of the use of a roller to consolidate the material is still chiefly employed on the majority of roads in this country to-day. The process of rolling the newly laid material appears to have been adopted about the year 1830, but it was some years later before the practice became general, chiefly because of the expense entailed. The steam roller made its appearance about the year 1863, and in the first instance was an adaptation of a form of traction engine.

In 1835 an Act of Parliament was passed to consolidate and amend the laws relating to highways in England. This placed the burden of upkeep of the roads on each parish and gave Justices of Quarter Sessions power to unite parishes into districts. This Act related to the appointment of Surveyors of Highways and Boards of Management, and authorised the erection of guide stones and posts at cross roads and other places. The surveyor was empowered to make, assess, and levy a rate in order to raise money for the purposes of the Act. Much of this Act is still in force, and forms the basis of highway law in many respects at the present day.

With the great development of railways in the Victorian era the traffic temporarily left the roads, and this resulted in their neglect, although strenuous efforts appear to have been made during the last days of coaching to improve the roads in order to keep the traffic upon them. The Turnpike Trusts had, by this time, become heavily in debt owing to a large decrease in tolls, but in spite of this they struggled on for a considerable period, and it was not until the Highways and Locomotives (Amendment) Act of 1878 was passed that their fate was eventually sealed. This Act gave the county authority power to enforce the repair of roads, and stipulated that all roads dis-turnpiked after 1870 should become main roads, half the expense of maintenance being thrown upon the county rate. This Act also empowered the county authority to declare ordinary highways to be main roads.

Since April 1, 1889, the appointed day referred to in the Local Government Act of 1888, main roads have, in general, been wholly maintained and repaired by the County Council. Urban authorities, however, were offered the option of "claiming" to retain the control of the main roads in their districts, the County Council making an annual payment in respect thereof. This Act also enabled the County Council, if so disposed, to delegate the control of the main roads in "unclaimed" districts to local highway authorities, making an annual payment out of the county rate towards the maintenance, repair, and reasonable improvement of same. Some County Councils adopt the system of direct management for the main roads, whilst others adhere to maintenance through the local authorities, and opinions differ as to which is the better method. In the County of Surrey, where the author's experience covers a period of nineteen years, a dual system is in existence, although only a small mileage is directly maintained. This is no doubt very largely because the county bordering on the Metropolis consists for the most part of Urban Districts where direct management would be difficult, inasmuch as the County Council is liable only for such scavenging as is necessary for maintenance, whilst the local authority is responsible for any sanitary scavenging necessary for the convenience of the inhabitants.

The author referred in greater detail to the methods of construction in use immediately before the introduction of motor vehicles, and pointed out the effect that was produced on these roads by the greater weight and speed of this new form of traffic as compared with the horsed vehicles which they extensively replaced. He then described the nuisance arising from dust, the extensive damage done to the existing road surfaces, and the means taken to

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minimise these troubles, due to the radical changes in the character of the road traffic.

The remainder of the paper was devoted to a review of the latest developments in regard to the construction and maintenance of road surfaces, and included descriptions of some of the methods used in the County of Surrey, the main roads in which are more used by motor-cars than those of any county around London. Details were given of the mode of construction and comparative cost of water-bound macadam, tar macadam, pitch-grouted macadam, wood-block paving, and bituminous surfacing, and an illustrated description of a drying and mixing plant for bituminous materials was included. The paper closed with a brief description of the aims and activities of the Road Board.

ULSTER SOCIETY OF ARCHITECTS.

THE May general meeting of this Society was held on the 31st ult. at 9 Howard Street, Belfast. The chair was occupied by the President, Mr. N. Fitzsimons, F.R.I.B.A., and there was a full attendance of members, including a number from Londonderry and district. The minutes of the previous meeting were read by the hon. secretary, Mr. T. W. Henry, and confirmed. Among other matters under discussion was the practice of county and district surveyors and their assistants engaging in private practice while in receipt of public salaries, in competition with qualified architects. A number of instances were brought forward and discussed by Messrs. R. M. Young, J.P., J. P. McGrath, R. E. Buchanan, and T. Johnson, and on the motion of Mr. W. J. Gilliland, seconded by Mr. H. Seaver, the following resolution was passed unanimously: "That the attention of all the public boards in Ulster be called to the practice prevalent of public officials in receipt of salaries payable out of the rates engaging in competition for private practice with qualified architects, more especially at the present time, when there is so little work of a private nature for architects whose living depends on their practice. That a resolution passed on this matter by the Society on December 18, 1905, be reprinted, and a copy sent to each of the public Boards in Ulster."

SOME IRISH RELIGIOUS HOUSES.*

By IAN C. HANNAH, M.A.

THE Christianity of Ireland was largely monastic from its very earliest years. This is extremely clear from a study of primitive conditions in the Island of Saints itself, still more from a consideration of the Celtic missions in Scotland, in England, on the Continent of Europe, and elsewhere.

Largely at any rate monastic in constitution were the once world-famous schools of Ireland, such as Clonmacnoise, Glendalough, and Armagh.

The arrangements of a Celtic monastery were of the very simplest kind. A bank of earth or stones shut the community in from the world or fortified them against outside attacks, or perhaps this was still more effectively accomplished by the remoteness of the situation. The buildings were detached, the bee-hive huts in which the monks lived, the small rectangular stone churches in which they prayed; perhaps a round tower rose high above them all. From Adamnan's "Life of Columba" (chapter XV.) we learn that as early as the sixth century there was at Durrow a lofty *Monasterium Rotundum*, which formed the "great house" of the convent, and it is tempting to find in it at least the embryo of the round tower.

The peculiar features of the time-honoured abodes of Irish learning have to-day a fascination that is absolutely unique. The numerous little oratories of stone (occasionally the traditional seven in number, but far oftener less or more), some of them with massive cyclopean masonry and *antæ* recalling the Levant—here and there with double roofs of stone and chambers for the priests between—the tall wheel-crosses with their striking carven bas-reliefs, above all the battering round towers with their conical caps of smooth wrought stone, rising high over the roofs and the trees—all combine to give to an Irish holy place an atmosphere absolutely unlike any other and one lovable to an extraordinary degree. There is a vast and profound restfulness from the absence of the bewildering magnificence of the great abbeys of other lands.

The service rendered to mankind by those splendid monastic schools has never yet been adequately told. Here, almost alone in the whole of Western Europe, was learning kept alive through the dark ages between the fall of Rome and the days of Charles the Great. While many Christian students were sitting at the feet of turbaned oriental teachers and the scintillating mosaics of the fair cities that the Moslems had founded or adopted in Mesopotamia and Spain, others were getting a not inferior education at the hands of devoted monks under the damp thatch of huts on the remote Irish bogs.

The atmosphere of the Eastern Church, with its gilded eikonastasis seen through a dim mist of incense set quivering by ancient chants, is strongly recalled by the only description we possess of an ancient Irish church in use, that of the Convent of Kildare, contained in the "Life of St. Bridget" by Cogitosus, a work of the ninth century. This is the building "in which repose the bodies of Bishop Conlaeth and the holy virgin St. Bridget, on the right and left of the decorated altar, deposited in monuments adorned with various embellishments of gold and silver and gems and precious stones, with crowns of gold and silver depending from above. For the number of the faithful of both sexes increasing, the church was built covering a spacious area and elevated to a menacing height, and adorned with painted pictures, having within three oratories large and separated by partitions of planks under one roof of the great house, wherein one partition (evidently corresponding to an eikonastasis)—decorated and painted with figures, and covered with linen hangings—extended along the breadth in the eastern part of the church, from the southern to the northern wall, which screen has at its ends two doors. Through that on the right the *summus Pontifex* with his chapter enters the sanctuary to the altar. Through that on the left only the abbess with her faithful girls and widows goes to receive the sacrament. Another wall from the west wall to the screen divides the floor into equal parts. The church has many windows, and on the south an ornate door for males, another on the north for women. Thus, in a very great basilica, a multitude divided by walls in different order and ranks and sex, but one in mind, adores Almighty God." The appearance and arrangements of this building must have closely resembled a Coptic church at the present day with its elaborate partitions.

The native style of Irish architecture culminated in Cormac's Chapel on the Rock of Cashel, whose consecration by a synod of clergy is recorded under the year 1134. It is one of the most interesting and distinctive buildings in the whole of Europe with its little transept towers, its gorgeous arcading, the radiant Romanesque detail, its sumptuous portals, its lofty chambers between the tunnel vaults of nave and chancel and the steep soaring outer roofs of stone, its mysterious heating flues, and its strange shallow square sanctuary projection that takes the place of an apse.

No real historic continuity is to be remarked in passing from the very humble ancient churches of Ireland—in some ways, at any rate, the most remarkable collection of really primitive churches in the world—to the far more ambitious fanes that rose on her soil in later days, beginning with the Cistercian Abbey of Mellifont. The essential features of Irish work suddenly disappear; we find buildings far larger and of quite different type, modelled on those of England. The architectural tradition was broken more completely than when in England herself Saxon structures were ousted by Norman ones. The Anglo-Normans in Ireland showed a deliberate contempt for the work of those who went before. Thus at Kilkenny and Armagh one great bishop's church supplanted a cluster of oratories. It is extremely fortunate that a vague sort of respect for the venerable round towers, so unlike anything they knew elsewhere, caused the later builders as a rule to keep off them those hands that were whitened with the broken mortar of almost everything else. Usually, as at Kildare, Kilkenny, Cloyne, and Kells, later churches were decorously built a few yards away. But a good many features of considerable importance were carried over from the old native style to the newer forms. Carved work continued very largely to consist of the coils and intersection bands so characteristic of Celtic work. Again, the Irish builders vindicated their independence in all sorts of unexpected ways. For instance, their turret stairs are almost invariably without the usual central newel shaft, consisting either of rough rubble cork-

* Abstract of a Paper read before the Royal Archæological Institute at a meeting held in the Apartments of the Society of Antiquaries, Burlington House, W.

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screw vaults or of corbelled steps surrounding a narrow little central well.

In later years Irish architecture swerved away very considerably from English; it went far towards the evolution of a national style. This is apparent to some extent in buildings for all purposes, but it is especially striking in religious houses, particularly friaries. Not only in architecture, but also in organisation, Irish monasteries after the Conquest present many features of great interest, entirely different from anything to be found elsewhere. Although many of these are owing inevitably to Celtic traditions, there are others entirely unconnected with them.

The last of the old and the beginning of the new are here closely connected in time. Mellifont Abbey, in co. Louth, founded in 1142—*i.e.*, twenty-six years before the first Anglo-Norman invasion—has nothing Irish about it; it follows exactly the same lines as the Cistercian houses in England that were rising at the same time, a small exception being that the warming-room is covered by a very rude barrel vault of the old Celtic form, roughly turned with unshaped rubble stone, then grouted with liquid cement to form a concrete mass, stability depending upon the goodness of the mortar used. In another Cistercian abbey, however, that of Jerpoint, which is but little newer than Mellifont, Irish influence among its builders was evidently still strong.

The great parent Benedictine Order was but slightly represented in Ireland, for by the time continental influences were seriously making themselves felt there the day of the offshoots had come. Its noblest Irish convent stood on high land just west of the city of Downpatrick. Even with the plaster-vaulting and other bastard Gothic details of the end of the eighteenth century, when the quire was restored to become the mother church of the diocese once more, the interior of this cathedral is one of the most impressive of all Irish churches.

More architecturally interesting on the whole than the houses of the monks—certainly more characteristically Irish—are the dwellings that were raised by the friars, not only among the buildings in the streets of towns but also beside far-off rocks and lonely tarns. In England the remains of the friaries are exceedingly scanty, and the reason is not far to seek. They were all situated in towns which in almost every instance have otherwise disposed of their sites. Only here and there, either because the towns were small and did not grow, as in the case of the Austin Friary at Clare in Suffolk, or because their buildings were acquired for other purposes by the city, as with the Black Friary (St. Andrew's Hall) at Norwich or the Grey Friary at Chichester, may their remains be studied to-day.

In Ireland very many friaries still remain, and in several cases they would require little beyond carpentry to restore their original appearance. Friars became exceedingly popular in the Island of Saints, so much so that before very long they had pretty well fully occupied the towns, their proper sphere of labour, and spread into the smallest villages and even the woods beyond. In such spots it was almost impossible for them to discharge the functions for which their Orders had been instituted, and they must have become practically indistinguishable from the monks; their dwellings are very largely known as abbeys.

Most of the friary churches are on the same general plan. The quire or *capella* is literally separated from the *navis ecclesiæ* by a thin central tower, through which passes what is hardly more than a tunnel. Sometimes the nave has aisles, or transepts, west of the tower, giving a rather singular ground-plan. This form of church was not exclusively for friars; it may be seen at the Carthusian priory of Mount Grace in Yorkshire. The cathedral of St. Lazarian at Leighlin, co. Carlow, is also on the same lines, though it has been served by a secular chapter since it was built in the twelfth century.

In the Irish friaries the tower usually rises from an oblong space the full width of nave and quire, but from east to west of much more restricted dimension. In some examples, for instance the Blackfriars church at Cashel, the tower is carried up to its full height a simple (rather ugly) oblong, but it is pierced only by a mere tunnel, opening from quire to nave. Apparently, however, this oblong form of tower was soon voted a failure, as indeed it was, and then the problem arose as to how to make it square and still preserve the oblong space that was desired in the church below. Usually this was done by the simple expedient of springing side arches between the long walls, just beyond where they were pierced by the opening between the nave and the quire, and these being without proper abutment (joining the sides, not the end of walls) had necessarily to be fairly substantial. In this normal case the tunnel under the tower is open to nave and quire by tolerably lofty arches; north and south lower arches open to deep recesses, which are sometimes lighted, and not seldom one of them gives access to the cloister by a door.

Something of the kind was usual in English friaries, but there was far more variety than in Ireland as to the form of steeple that rose above. The Irish tower is most often thin and lofty with the plainest battering wall, an ineffectual crown to a not very striking group of buildings. Its feebleness was clearly a matter of choice, and not necessitated by any lack of skill.

Within the churches of the Irish friars these tunnel-towers were further blocked by the insertion of very ample rood-lofts. As a rule these were structures of timber resting on corbels that still survive. Besides completely dividing the tunnel chambers with floors, they frequently project east and west to form galleries both in nave and quire. These tunnel towers became the recognised form for the churches of friaries to take in England and Ireland—there are, of course, exceptions. This does not seem, however, to have been the arrangement on the Continent of Europe.

By the fifteenth century the Gothic style was visibly breaking up after having for more than two hundred years maintained a uniformity through the whole of Western Europe that on the whole was surprising, despite very considerable local diversity. The English happily declined to follow the French into the excited palpitation of Flamboyant and developed the more sober and reasonable Perpendicular. The Scots likewise refused to adopt it, except in some individual cases, such as Melrose Abbey and Corstorphine Church; the Irish preferred to have a style of their own, characterised chiefly by the revival of features of earlier years, especially lancet windows and round arches. But even at first glance they do not look more ancient than they are. Indeed, in some cases they are more likely to be taken for the work of the early nineteenth century than for that of the thirteenth.

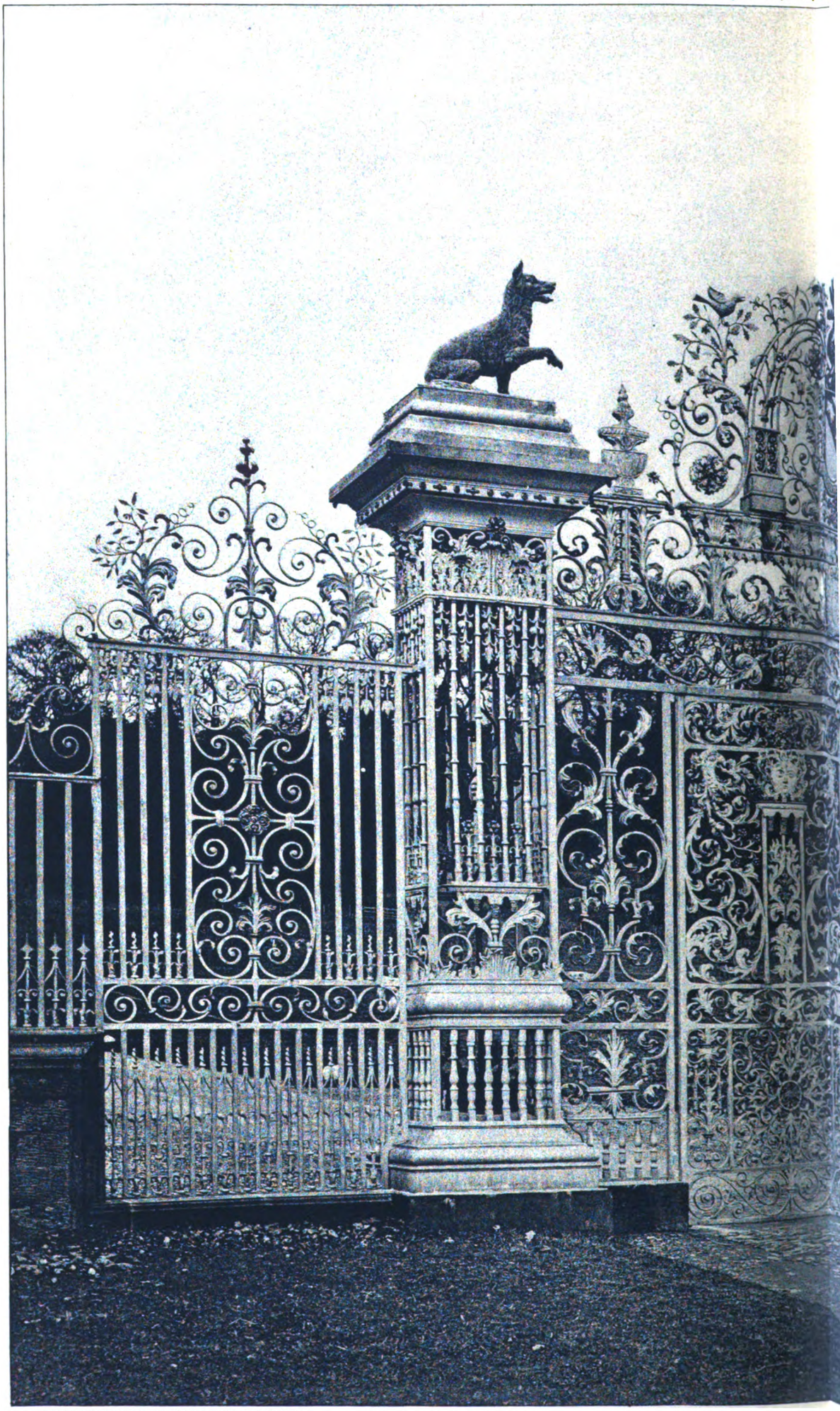
Candour compels one to admit that this national Irish style, so well exemplified in the friaries, is one of the thinnest, baldest, and least striking in all Europe. A greater contrast there could hardly be than between the massive richly-adorned and deeply-moulded little churches of the Irish Romanesque and these large, flat-featured and skinnily worked structures that rose after four centuries had passed.

Transepts oddly placed and frequently of somewhat undue length are very characteristically Irish. The most interesting example is the late twelfth-century cathedral at Limerick, which has become, by the reckless addition of transepts, a quasi five-aisled church, most confused and unsatisfactory in plan.

The whole appearance and character of many Irish religious houses have been changed in later times by the provision made for their fortification, so much so that in some cases what in truth was an abbey is now universally called a castle. While in England fortified monasteries rested behind the stout walls that defended their broad precincts and so were not architecturally affected, in Ireland it was the claustral buildings themselves that put on the garb of war. And for defence there was a tendency to prevent the buildings from straggling beyond the single square. The Cistercian abbey of Bective, standing on the Boyne, was entirely reconstructed during the fifteenth century with a single eye to defence.

How far in this distressful land went the idea that spiritual men must frequently wage carnal warfare is apparent from a grant made in 1378 by Richard II. to the Carmelite Friars at Leighlin, "in consideration of the great labour, burden, and expense which the priors of this monastery have and do sustain in supporting their house and the bridge contiguous thereto against the King's enemies." In other words, a harmless community of friars became a more or less recognised royal garrison whose duty it was to keep open communications by guarding an important bridge over the Barrow. After the Dissolution this friary was maintained as an ordinary stronghold. Fortified churches were still built in later days on the unpeaceful Irish soil. The parish church of Antrim, dated 1596, an interesting example of the Gothic of that time, has its mullioned windows placed high in the thick and well-built walls, which below are loop-holed for musketry.

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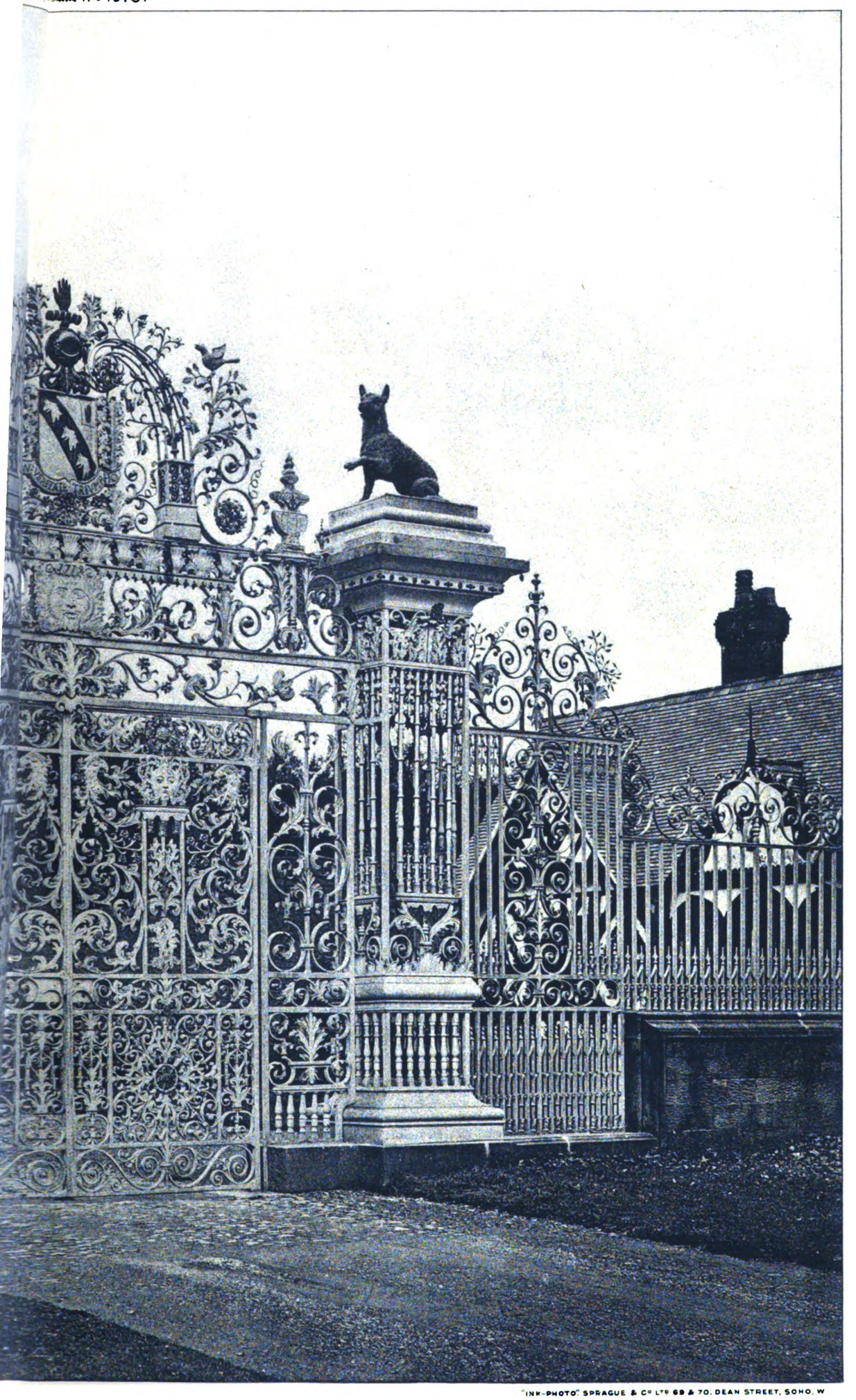


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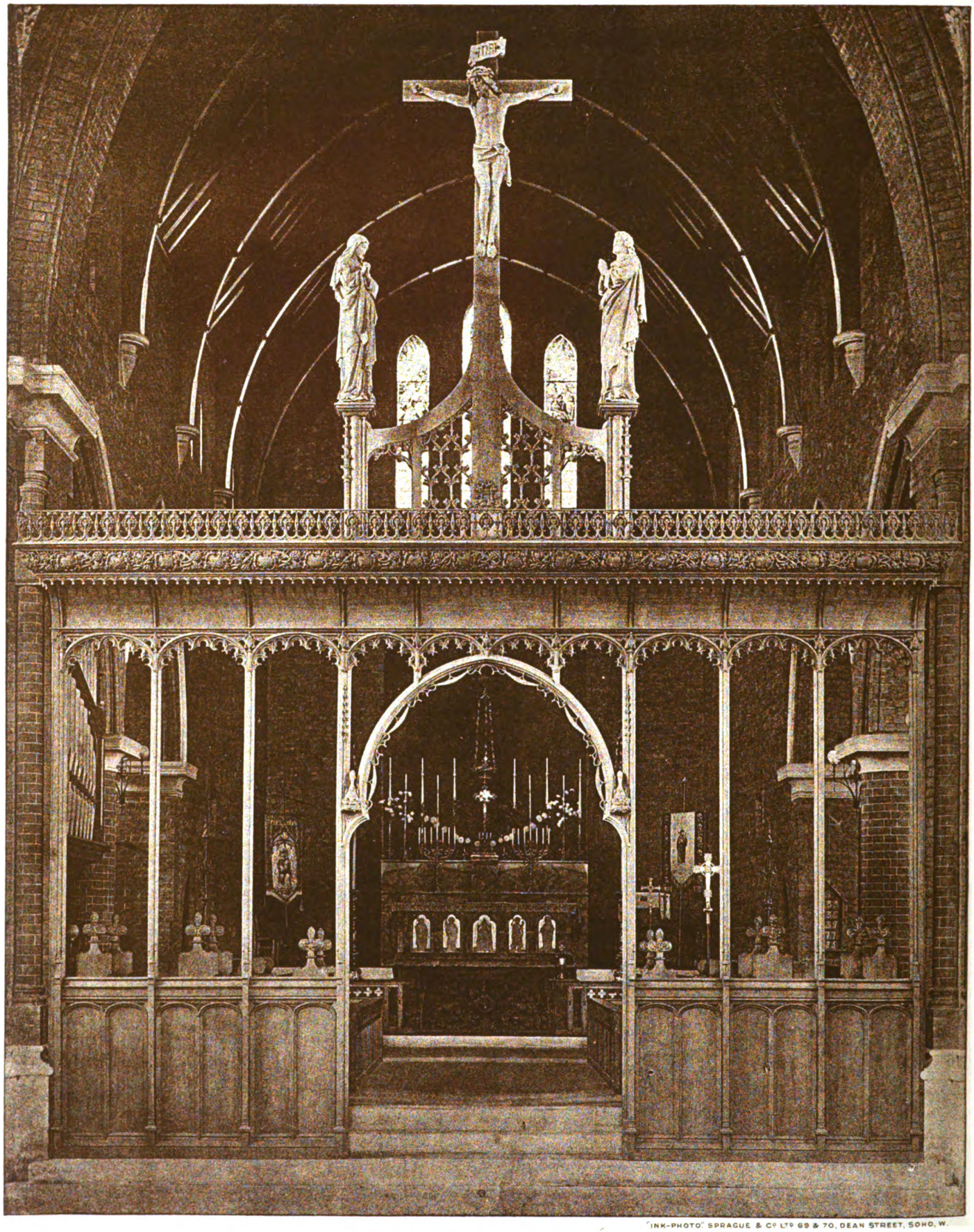
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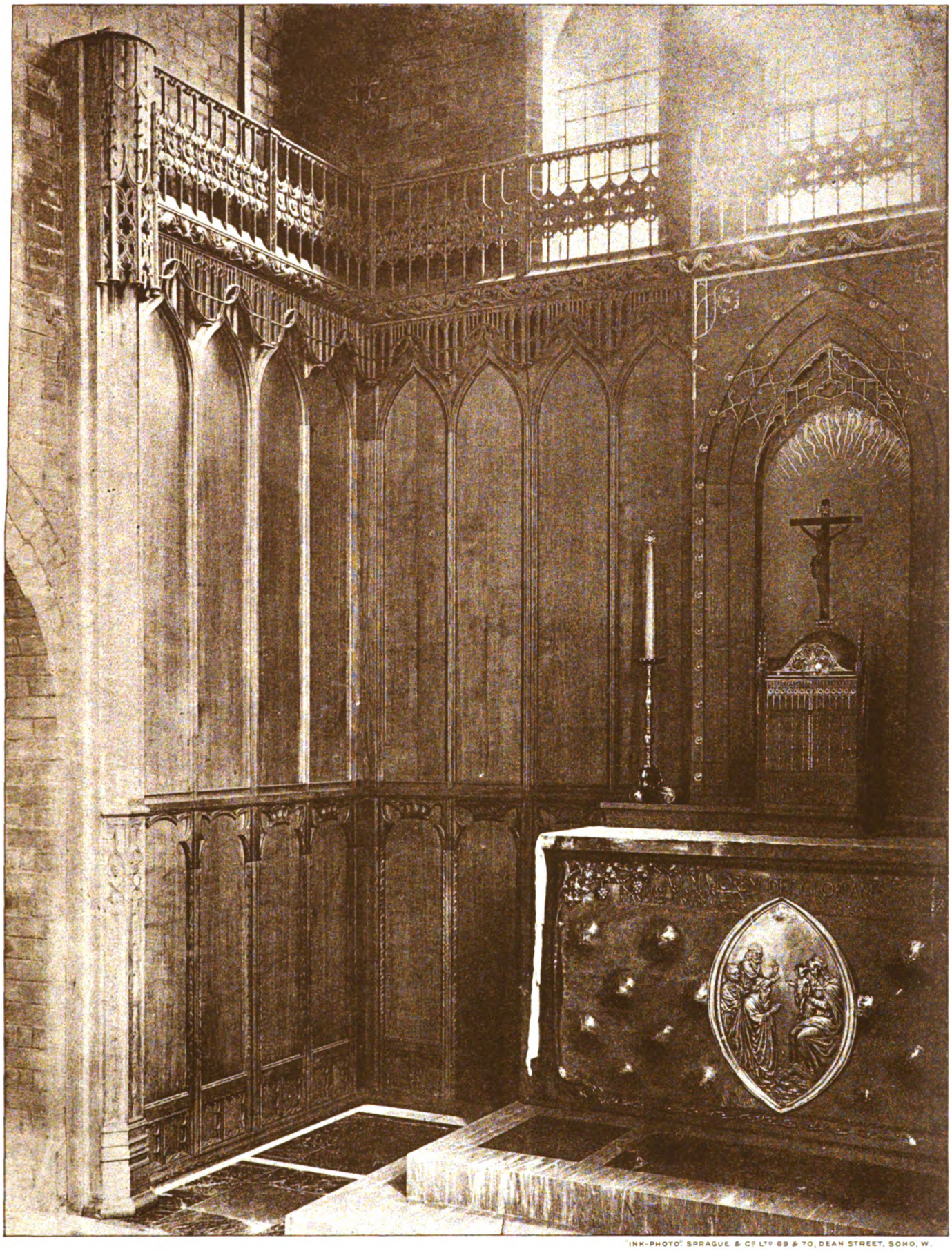
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THE REPORT OF THE LAND ENQUIRY COMMITTEE: RURAL HOUSING.*

By R. STRACHAN GARDINER (Fellow).

IN the series of Papers on the main divisions of the Report of the Land Enquiry Committee, arranged by the Institution for this session, I have been asked to undertake the Paper on "Rural Housing," and, fully realising the importance of ventilating the subject, I submit the following remarks on this most pressing matter in the hope that they may provide material for the discussion which it is my duty to open, in conjunction with my colleague, Mr. Joseph, who deals with "Urban Housing." The Reports have been summarised in previous Papers, and, bearing in mind the limited time at my disposal, I propose to refrain from reference to the voluminous details of the existing state of things, and to endeavour to direct the discussion towards the goal that should be aimed at, the evolution, by those who have an intimate and practical knowledge of rural conditions, of a constructive policy that will bring practical results within reach, and so tend to the solution of a problem which, notwithstanding the periodical attempts of the Legislature and the earnest efforts for many years of housing reformers, is still awaiting a satisfactory settlement.

We may differ from many of the opinions expressed in the Report, which is viewed by some with distrust as having political bias; but I think it will be agreed that it represents an enormous amount of most painstaking work, providing ample food for the most serious consideration, and, generally speaking, a strong case has been established for the immediate necessity of erecting a large additional number of rural cottages.

Criticism is to be welcomed, but I suggest it is not a time for destructive criticism, and, having approached the subject from the point of view of one who has spent his life in rural districts, with the agricultural labourer chiefly in mind, I feel there is no question of greater importance, with the object of preventing our rural population from leaving the land, than the provision of an adequate supply of comfortable cottages. Changes in the near future are inevitable; one cannot fail to be struck with the gradual alteration in the attitude and outlook of rural labourers—even though the rural mind moves slowly—and they are beginning to realise that their lot can and should be improved. Obviously the wiser course, therefore, is to steer this growing movement into safe channels.

In any scheme of housing reform the education of the people in the requirements of sanitation, the value of light and air, and the evils of overcrowding is most essential. For example, it is little use stipulating for windows of a minimum area if they are never opened; and I have known cases where extra rooms have been added to cottages, and the occupants have lived as before and taken in lodgers. The standard of living is, however, rising steadily, and an element that is going to have its effect on the housing question is the influence of the great improvement in our elementary schools upon the children, who begin to appreciate the value of light and air, with cheerful surroundings, and in many instances become dissatisfied with the condition of the houses to which they have to return. Hence it is evident the rising generation are not going to be content with what their parents have accepted without demur. This is all to the good, and might well be supplemented by actual instruction in the schools, and our endeavours therefore may be more fruitfully directed to keeping the young people on the land, rather than the more doubtful task of attracting back those who have already gone.

Remedies for existing evils have from time to time been suggested which are only adapted to quite ideal conditions, and I do not think it is always sufficiently remembered that we have ordinary human nature to provide for, with its inevitable shortcomings. Some of our most sincere social reformers, too, are apparently more conversant with urban conditions, and consequently their proposals from a rural standpoint are in many respects impracticable. At the same time we are reminded that the question of rural housing has a direct bearing upon urban matters. Cases are quoted where, owing to the scarcity of rural cottages, men employed in the country are obliged to find accommodation in the neighbouring towns. It is frequently the low-paid rural labourer who migrates to the town in search of higher wages and a better home, and any means of keeping him in the country would tend to lessen the competition among unskilled labour in the towns.

Many of our existing cottages are undoubtedly inadequate and in an unsatisfactory condition, more particularly those belonging to small owners—sometimes working men—who are not in a position to afford the expense of repair or reinstatement. In a number of cases such cottages are only allowed by the local authority to be occupied owing to the lack of alternative accommodation. These small owners might in many cases be considerably helped by an extension of the Manchester Corporation practice, under which the local authority carries out the work, and accepts payment by instalments. Interest at 4½ per cent. is charged on the outstanding amounts, and, on failure to pay, the corporation collects the rents.

The shortage of houses has, however, first to be made good before such other evils as overcrowding and insanitary conditions can be abated. In the past the large landowners have provided cottages on their estates at uneconomical rents, not only for their own dependants, but for employees of the State, local authorities, railway companies, &c., but, bearing in mind the tendency to break up the larger estates, and the trend of agrarian legislation, this source can hardly be depended on in the future. If all employers undertook the responsibility of housing their own men the position would be greatly simplified, but it is difficult to see how this could be enforced, and the policy is condemned by the Committee as being open to their objections to the "tied house" system. In some rural districts within easy reach of large towns, particularly near the sea, and amid picturesque mountain scenery, cases occur where owners are tempted by offers of high rents to let cottages to people who use them for week-ends and summer holidays, increasing the scarcity as far as workmen are concerned. The decreasing popularity of the "living-in" system for farm labourers has also affected the demand for cottages.

The effect on personal character of moving a family into a better cottage is very noticeable. Give the workman a good house and garden that he will take a pride in, and he becomes a more efficient worker and a better citizen. In rural districts there is a great difference between what may be called the comparatively fixed population and a movable population employed in a terminable industry, such as coal-mining. The latter do not take root in the same way, and naturally less interest is shown in their homes. To facilitate the housing of a mining population, local by-laws might well be modified as far as possible to allow of a more temporary class of building being erected.

The problem of the countryside, as in the towns, is the housing of the poorest, and the main difficulty one of cost. The Committee state that the reason which outweighs all others in preventing private individuals from building more cotages is that the wages paid do not allow an agricultural labourer to pay an economic rent.

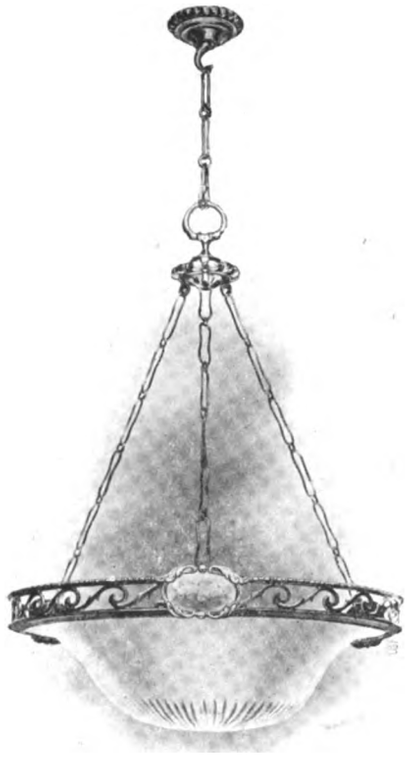
The housing of those who can afford to pay such a rent may be left to the private enterprise which has hitherto provided 99 per cent. of the working-class houses in this country, although the bulk of them have been built in urban areas in response to the better prospects they afford there as an investment.

Building houses is a popular form of investment among the more thrifty workmen; they like to see something tangible for their money, but the feeling of insecurity caused by the Finance Act, 1910, dearer money, attraction of other investments, increased cost of building, and the responsibilities thrown upon house-owners by the Housing Acts, among other reasons, have tended to lessen the popularity of bricks and mortar as an investment for the time being.

But how is the man who earns £1 a week, or less, to be provided for? It cannot be done by cutting down accommodation and area of site; a workman is entitled to an adequate home, and the best allotment is an ample garden attached to the cottage, which is a means of adding substantially to his income. The health of the labourer is his stock-in-trade, and, improved general health being one of the objects of reform, this should never be lost sight of in the search for cheap construction. What is an economic rent in such cases? Are we to assume that the results of better housing benefits the individual occupier only, or should the indirect gain to the nation following an improvement in the general health of the community be taken into account? One can hardly expect that a man earning 20*s.* a week can afford more than 2*s.* 6*d.* a week

* A Paper read at an Ordinary General Meeting of the Surveyors' Institution.

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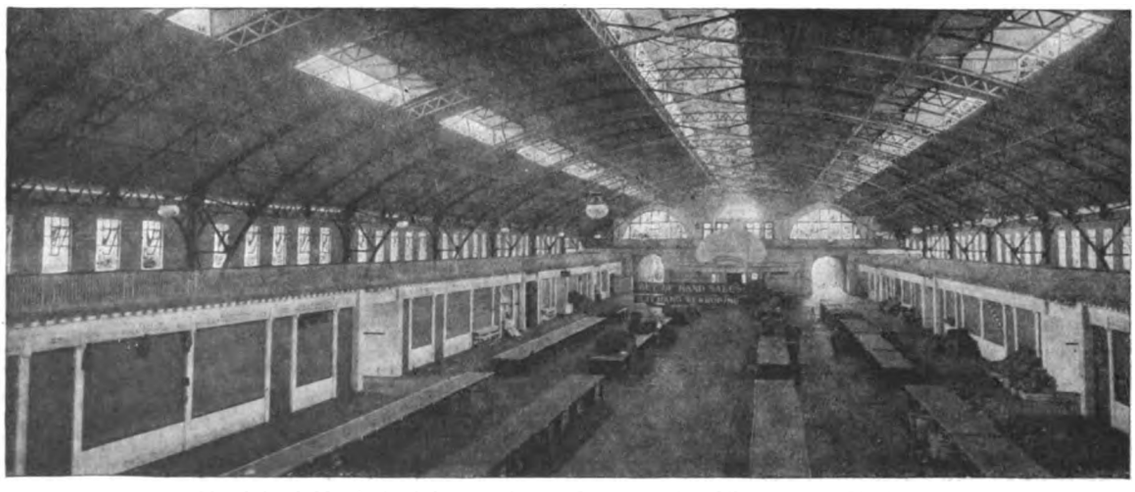
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for rent, and it is equally difficult to see how an adequate cottage can be provided for him at less than 4*s*. a week if a commercial rent has to be obtained. It is also most desirable that cottage occupiers should pay their own rates and take an intelligent interest in local government.

Unless the problem of housing our poorest workers in sanitary dwellings is to be abandoned one of two methods must be adopted. Annal grants will have to be made to local authorities to enable them to let to these people at rents based on their ability to pay, or wages will have to be raised sufficiently to allow them to meet an economic rent. The Inquiry Committee advocate a rise in wages to enable a labourer (*a*) to live in a state of physical efficiency, and (*b*) to pay an economic rent for his cottage. The Government have decided to deal with the rural housing problem by the establishment of a minimum wage based on this recommendation, and if the conclusion has been come to that it is the solution in the case of agriculture, it seems inevitable that the same method will be adopted with other industries. We should therefore satisfy ourselves whether the agricultural labourer now receives an adequate return for his work, and as much as the farming industry can afford to pay. If the reply is in the negative, everything possible in the way of increasing production, revision of land taxation, co-operation, and adequate equipment of farms will be necessary to put the farmer in a position to meet a rise in wages, and the proper proportion between cost of labour and rent becomes a question of considerable importance. An appreciable difference would be made if the payment of wages in kind, now a prevalent custom, were commuted to weekly cash payments. It appears to me that any artificial forcing up of wages would defeat its own end, as a farmer would be compelled to reduce his labour bill to the amount he could meet. An economic wage is quite as vital a matter as a commercial rent if the industry concerned is not to suffer. It would, however, be manifestly unfair to consider the case for uneconomic rents unless wages paid are the maximum, as such a method would amount to subsidising one class of employer at the expense of the community. Agricultural wages have risen in many districts during the last few years, while on the other hand so have the wages of those who labour in the building trade, and any further natural rise would probably be a gradual one. The increasing price of commodities has also to be taken into account as a balancing factor.

A further recommendation is that it shall be made a definite statutory duty of local authorities to provide adequate and sanitary housing accommodation for the working classes, where permanently required in their area. Theoretically it is already their duty to provide a sufficient supply of houses and to close insanitary dwellings, but in existing circumstances the task imposed upon them by the Legislature is too heavy for them to undertake, and the work must in some way be made more attractive. Block grants from the Exchequer appear to be the only effective means with wages and economic rents in their present relative proportion, and even in the event of a rise in wages as advocated there will always be a residuum of the poorest unable to pay an economic rent. Local statistics generally reveal a greater amount of disease, intemperance, and crime in districts where housing conditions are worst, and reforms with the object of lessening these evils are surely worth considering from a national point of view.

The Committee also advocate better facilities for the erection of cottages being given to public utility societies, and while it is hoped they will always be encouraged by loans for long terms at low rates of interest, it is difficult to see how such bodies can effectively deal with the purely agricultural problem of building scattered cottages on many detached plots of land throughout a country district, and, as far as I can see, we shall have to depend chiefly on the local authority where cottages are not provided by private individuals. Cheap money being so important, local authorities have the great advantage of being able to offer the rates as security, and building would in most cases be done by contract with local builders, so that they would not suffer by loss of trade.

The Report emphasises the necessity of stimulating local authorities to make more extended use of their powers under the Housing Acts, but I am convinced that the hesitation and delay is due to the difficulty of carrying out what is admittedly the ideal system—a self-supporting scheme, particularly having regard to the advancing cost of building. Estimates of the increase vary from 20 to 30 per cent. during the last ten years or so, and it is probable that it may rise still more.

There is usually considerable local opposition to any part of the expense of a housing scheme being charged to the rates, which are already a rapidly growing burden, and in itself a check to building. To bring pressure to bear on local authorities may tempt them to curtail necessary accommodation as a means of reducing cost, or to cross the line between economical construction and jerry building, which would be a disastrous result, subsequent repairs being quite as important a consideration as capital outlay. The numerous competitions for designs of cheap cottages during the last few years have generally failed to solve the difficulty from the rural point of view, low first cost being usually obtained by reducing accommodation to an impossible minimum, and in some cases the omission of quite essential items of expenditure. The cost of schemes may in some measure be reduced by modifying by-laws with respect to width of roads and limiting the number of houses per acre, which would entail less road-making. It is to be hoped that landowners generally will follow the example set by some, and offer land where required at low prices: possibly 999-years' leases at moderate ground rents may be a means of facilitating matters. Any unnecessary cost in the development of a building estate eventually becomes a general burden in the form of higher rents. It hardly seems fair that all the expense of streets in a housing scheme, which become thoroughfares, and of sewers which are part of the main system, should be charged to the scheme. A proportion might reasonably fall on the rates.

The Committee advocate a central housing authority, but while it may be admitted that the rural district council, the existing authority in rural districts, is not the most suitable, there is a general opinion that the work might well be undertaken by the county council, a knowledge of local requirements being very necessary. Members of rural district councils are often owners of house property in the district themselves, and they are so subject to local influence that the work may be very difficult for them. Such councils also are not in a position to offer their surveyors the salary that would attract the competent men required for the responsible duty of launching and working a housing scheme. A county council employs a qualified architect, and with the help of local advisory committees would be able to deal with schemes on a more extensive scale, and effect economies by standardising parts and purchasing in larger quantities. The use of local materials with a local type of plan, to which workmen in the district are familiar, means a reduction in cost, and a county conference of local architects, surveyors, and builders, who would, I feel sure, readily give their experienced advice, might be of great assistance.

In dealing with rural areas their possible gradual transition to an urban character should not be lost sight of, and the Committee emphasise the value of cheap transit for moving the town labourer on to cheaper land, and to more healthy, cheerful surroundings. It is worthy of note at the moment, when the courage and endurance of the Belgian soldier are fresh in our minds, that Belgium provided such cheap and rapid transport facilities for her workers, while only 23 per cent. of occupied persons were employed in agriculture no less than 56½ per cent. of the total population lived in country districts, which meant that about one-third of the urban workers were rural dwellers. In this country (1911) 78 per cent. of our population lived in urban areas.

One does not build a cottage without first preparing a plan, and it is just as necessary to plan the situation and arrangement of cottages. "Village planning" should be on a scientific basis just as much as "town planning," and the rural housing authority might with advantage be armed with powers over building lines, area of site, improvement of roads, and reservation of open spaces. Cottages for ploughmen and stockmen would need to be built within easy reach of the farm steading, but for ordinary labourers it is better to concentrate them near villages, to allow of social intercourse and to lessen the distance children have to walk to school.

The cottage required by a country labourer is in many ways different to that which meets the necessities of an urban worker. The latter does not need so much accommodation; he can purchase commodities at a convenient distance in small quantities, and places of amusement and recreation are within easy reach. The farm hand in his frequently isolated cottage requires more room so that he can spend a winter evening in some comfort at home; he has to purchase food

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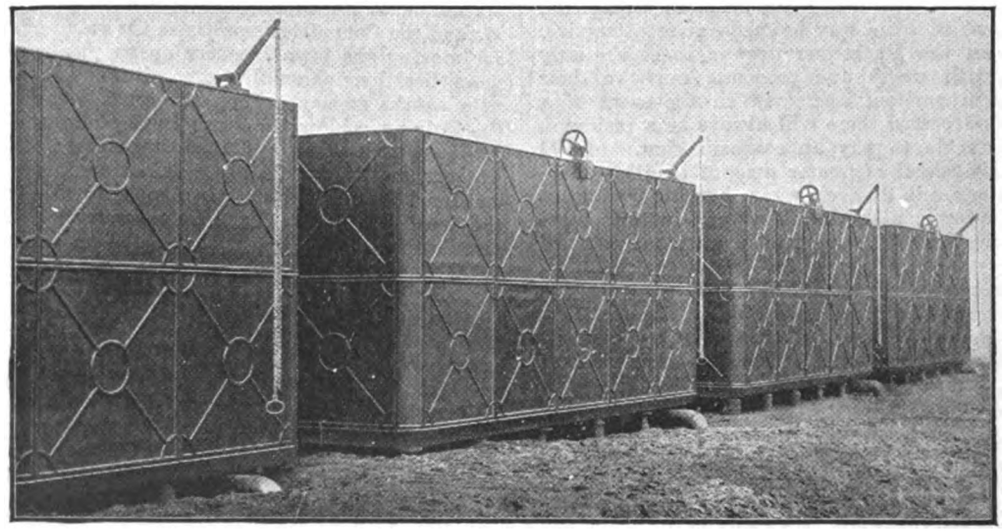
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in greater bulk from some distance, coal and firewood by the load, and provision has to be made for a pig, garden tools, &c. If a man returns from his daily toil to a cramped living room, used by all in common, where housework is done, wet clothing hung to dry, and so on, can one be surprised if he seeks the more congenial surroundings of the village inn, and so wastes money that might be better spent in rent for a more comfortable home?

Housing the agricultural labourer is comparatively expensive, as cottages can rarely be built in large blocks; larger groups than four are seldom advisable and pairs are generally most suitable, as it is convenient to have a neighbour at hand in case of need, but a detached cottage is frequently very popular. I have found an intense objection among the better class of country workmen to living in one of a row of cottages. The double-storey cottage is, I believe, much more appreciated than the bungalow type.

It is evident that the necessity of reducing cost to a minimum does not allow of any expenditure on ornament, and a plain substantially built cottage that looks well adapted to its purpose is in the long run much more satisfactory. Most of the old picturesque cottages, which are a pleasing feature of our countryside, owe their beauty not so much to architectural effect as to the mellowing effects of time, to their appearance of being thoroughly at home in their surroundings, and to an attractive wall covering of creepers. At the same time I am no advocate for one standardised plan, or absolute uniformity of design, and much can be done in the way of variation without materially adding to cost. Careful planning should be mainly directed to the provision of the maximum amount of convenient house-room with the minimum quantity of material. In the majority of cases three bed-roomed cottages are required for the proper separation of the sexes and the prevention of overcrowding. Sufficient accommodation to enable a family to live together as long as possible may help the difficulty of meeting an economic rent from the combined income of the working members, where the earnings of the principal bread-winner are inadequate. A certain number of single men have also to be provided for, and in the case of a small family, where the third bedroom can be spared without causing overcrowding, a lodger represents an addition to the income of the household.

About £200 appears to be the average cost of a suitable five-roomed labourer's cottage, and it is incumbent upon local authorities to use substantial materials that will, at all events, last for the period of the loan, with the lowest possible outlay in repairs. This is one of their difficulties, having to build better houses, being in the position of trustees, whereas the demand is for lower rents. The most satisfactory walling materials are brick and stone, according to locality, and in my own district, where bricks are obtainable at 24*s.* per thousand, a 9-inch wall rough cast in cement is found to be dry and economical. Eleven-inch cavity walls, where men are accustomed to building them, can be recommended, but if mortar is carelessly used and allowed to drop on to the damp-course and wall-ties, a number of conductors for damp are easily formed. Concrete does not appear to represent much saving unless a large number of cottages can be built at a time and a local supply of suitable material is available; there is also an unsatisfactory risk of dampness, which can be eliminated in dealing with brick and stone walls. It is, however, an advantage to use concrete fittings, such as doorsteps, window heads and sills, lintels, &c. Wood or galvanised iron, requiring double walls, cost practically as much as the more substantial materials when their comparative life and cost of upkeep are taken into account.

Under the Irish Labourers' Acts nearly 50,000 cottages have been built in Ireland with State assistance for rural workers, with excellent results. There has been a great improvement in vitality and health, and while no attempt has been made to charge economic rents, wages have risen. The beneficial effects of comparison have also stimulated owners to put existing cottages in better order, and building by private enterprise is said not to have been affected, as the low wages paid prevents the serious consideration of providing cottages for these men as a commercial investment. The cottages built are mostly one-storey buildings with a living room and two bedrooms, and cost from £128 to £211, according to locality, the latter figure appearing somewhat high. Rents vary from 4*d.* to 2*s.* 9*d.* a week, the average throughout Ireland being 1*s.* 1*d.*, and they have been calculated according to the ability of the labourer to pay. The tenants in all cases pay rates, varying from 10*s.* to 22*s.* per annum.

The Committee estimate that 120,000 new cottages are required in rural districts, and shortly after the outbreak of war the Housing Act No. 2 was passed, with the object of encouraging local authorities and public utility societies to embark upon housing schemes, chiefly with a view to lessening possible unemployment in the building trade, and a sum of £4,000,000 is available for advances. Before the war the rate of interest for loans granted by the Public Works Loan Commissioners to local authorities was 3½ per cent., and the annual repayment for interest and sinking fund for a period of sixty years amounted to £4 0*s.* 2¼*d.* per cent. Notice having been given that the rate of interest would be raised, schemes in process of formation were in some cases checked, and the rate has now been fixed at 4¼ per cent. Where a local authority is able to show there is unemployment in the building trade 10 per cent. of the capital outlay will be advanced by way of free grant, and on this basis the annual repayment for every £100 is £4 3*s.* 4*d.*, or 3*s.* 1¾*d.* per cent. more than before the war, equivalent to rather less than 1¼*d.* per week on a £200 cottage.

Authorised societies before the war could borrow at 3½ per cent. for thirty years, and 3¾ per cent. for forty years, the annual repayment amounting to £5 8*s.* 9*d.* and £4 17*s.* 3¾*d.* respectively. Under the new Act advances would be made up to nine-tenths of the total expenditure, made up of 10 per cent. free grant, and the remainder by way of loan for sixty years at 5 per cent., the annual repayment amounting to £4 8*s.* 10*d.* per cent. These are valuable concessions, although partly balanced by the rise in the cost of building owing to the war, chiefly accounted for by the increased price of timber.

No less than twenty-eight Acts of Parliament have been passed dealing with the housing question during the last fifty years, and, in conclusion, I would like to join in the general appeal for a consolidating Act, which would do away with a complicated system of cross-references and greatly lessen the present difficulties of ascertaining the legal position.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Crewe.—The "Earl of Crewe" Hotel: alterations. Mr. P. Hoole (of Northwich), architect.

Thingwall.—Sanatorium (£7,993).

CUMBERLAND.

Harrington.—No. 5 Church Road: alterations, for the London Joint Stock Bank, Ltd. Mr. C. W. Eaglesfield, architect, 2 Gordon Street, Workington.

DURHAM.

Chester-le-Street.—Fifty Council houses, Bullion Lane (£10,360).

Sunderland.—"Havelock House": conversion into cinema, shops, and offices, for the Provincial Cinematograph Company, Ltd. Messrs. McLaughlin & Harvey, Ltd. (of Belfast), contractors.

ESSEX.

Dovercourt.—The "Phœnix" Hotel: rebuilding. Messrs. Morgan & Buckingham, architects. Mr. E. Saunders, contractor, Hill Crest (£3,687).

Great Dunmow.—Council School: proposed enlargement. County Education architect.

Romford.—St. John's Church: proposed extension.

Witham.—House, Hatfield Road, for Mr. Pinkham.

KENT.

Beckenham.—Council school (£12,250). County Education architect.

Folkestone.—Council school, Foord.

Herne Bay.—"Highcroft," Beacon Hill Parade: additions. Mr. R. Messenger, A.R.I.B.A., architect, Town Hall Chambers.

Maidstone.—St. Faith's Home, Lower Fant Road, for the Committee of Management (Mill Street).

North Preston.—Council School: new buildings, &c. (£700).

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ENGLAND—*continued.*

KENT—*continued.*

Ramsgate.—The "Bull and George" Hotel, High Street: rebuilding (£4,000). Messrs. Jennings & Gray, architects, 4 St. Margaret's Street, Canterbury.

Sevenoaks Weald.—Council School: teacher's house (£560).

Sidcup Hill.—Council School: additional forty places.

Whitstable.—Special Subjects building (£550), for the Education Committee.

LANCASHIRE.

Bolton.—Six houses, Bury Road, Breightmet, for Mr. F. Draper.

Workshop, off Viking Street, Great Lever, for the Bolton Railway Wagon Company, Ltd.

Nateby.—Four cottages, for Messrs. J. Maitland, Ltd.

LINCOLNSHIRE.

Grantham.—Proposed R.C. school.

MIDDLESEX.

Heston. — Lunatic asylum. Mr. H. G. Crothall, F.R.I.B.A., County architect, Guildhall, Westminster, London.

Hornsey.—Six houses, Lauradale Road, Muswell Hill, for Mr. E. A. Lewis.

MONMOUTHSHIRE.

Bedwellty.—Elementary school.

NORTHAMPTONSHIRE.

Northampton.—General Hospital: open-air pavilion (£750).

NORTHUMBERLAND.

Scotswood.—St. Margaret's Church, corner of Denton and Armstrong Roads.

NOTTINGHAMSHIRE.

Nottingham.—St. Jude's Church, Mapperley: extensions (£3,000).

SOMERSET.

Wincanton.—Wesleyan Chapel.

STAFFORDSHIRE.

Lower Penn.—Tuberculosis sanatorium.

Stafford.—New banking premises, Greengate Street, for the National Provincial Banking Company.

Tamworth.—St. John's R.C. school for 192 places.

Tipton.—Tuberculosis dispensary, Dudley.

Wolverhampton.—Tuberculosis dispensary.

SURREY.

Reigate.—Almshouses. Mr. C. E. Salmon, architect, 67 High Street.

WARWICKSHIRE.

Atherstone.—Four houses, Coleshill Road, for Mr. J. H. Holland.

Birmingham.—Factory. Messrs. Buckland & Farmer, FF.R.I.B.A., architects, Norwich Union Chambers, Congreve Street.

Coventry.—Business premises, corner of Brays Lane and St. Agatha's Road: additions, for Messrs. Mitchells and Butler's, Ltd.; also

Business premises, corner of Brighton Street and Hastings Road: additions.

Electric Light Station, Sandy Lane: extension, for the Corporation.

Factory, Lockhurst Lane: extension, for Messrs. Pool, Lorrimer & Tabberer.

The "Thistle" Inn, West Orchard: alterations, for Messrs. Phipps & Co., Ltd.; also

Outdoor beer-house and three houses, Stoney Stanton Road.

Four houses, Styvechale Avenue, for Mr. W. H. Satchwell.

House and house with shop, Hearsall Lane, for Messrs. Patrick & Barratt.

House, Holbrook Lane. Mr. J. G. Gray, builder, 300 Foleshill Road.

"Sandown," Allesley Old Road: alterations, for Messrs. Aston & Greenhill.

House, Farman Road, for Mr. J. Bolland.

Nine houses, Hawkins Road, for Mr. G. W. R. Philpot.

Eight houses, &c., Heath Road, for Mr. A. Jeffs.

Offices, Queen's Road: additions, for Messrs. Alfred Herbert, Ltd.

Stamping shop, off Spon Street, for Rudge-Whitworth, Ltd.

Transformer house, Holbrook Lane, for the Coventry Stamping Company.

Rugby.—Proposed tuberculosis dispensary, Lower Hillmorton Road.

WORCESTERSHIRE.

Evesham.—Joint Hospital: extensions and alterations to the administrative block (£1,000).

YORKSHIRE.

Brighouse.—Two houses, Lightcliffe Road. Messrs. Lister Brook & Co., builders, Slead House.

Badger Hill Mills: additions and alterations, for Messrs. J. Smith & Sons, Ltd.

Doncaster.—Houses, Norton. Messrs. Garside & Pennington, architects, Old Bank Chambers, Ropergate, Pontefract.

Halifax.—St. John's Church, West Vale: schools.

Methley.—Ten houses, Pit Lane, for Mr. Wright.

Moorthorpe.—Wesleyan Chapel.

Skipton. — Hospital: extensions (£1,000). Mr. J. Hartley, architect, Swadford Chambers.

WALES.

Aberdare.—Central Offices, Park Road, Aberaman: extension, for the Cwmbach Industrial Co-operative Society, Ltd. Mr. T. Roderick, architect, Clifton Street.

Hirwain.—Houses, Rhigos. Mr. A. S. Cameron, architect, 14 Victoria Square, Aberdare.

Police Station: alterations, &c.

Port Talbot.—Council school for 380 places.

Ystradmynach.—Council School: additions.

SCOTLAND.

Dundee.—Chocolate Factory, Murraygate: additions and alterations, for J. Chapman's Trust.

Houses, Watt Street: alterations, for Mr. J. B. Murray.

Premises, Caldrum Street: addition, for Mr. J. R. Miller.

Glasgow.—U.F. hall and rooms, Morrison Street, for the Presbytery.

Works, Cathcart: addition, for Messrs. G. & J. Weir, Ltd.

Netherton Works, Anniesland: additions, for the Loco Roofing Company, Ltd.

Rosyth.—Six cottages, engine and boiler house, &c., for the Rosyth Brick and Tile Company, Ltd.

IRELAND.

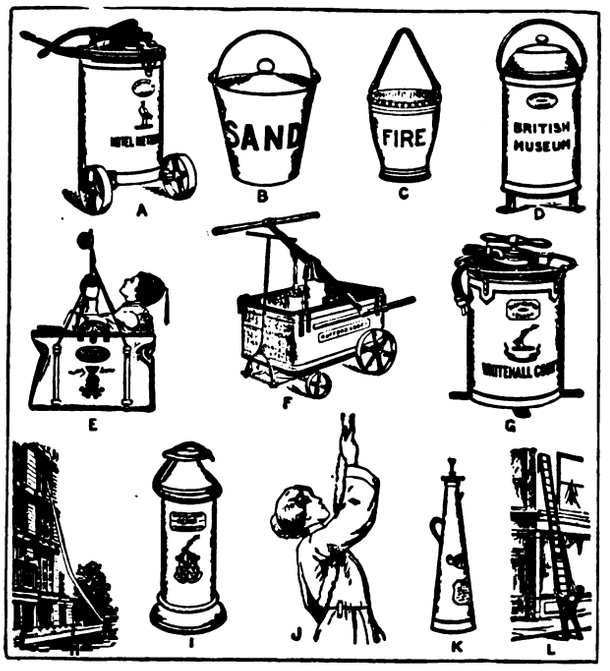
Tipperary.—Dispensary, for B.G.

THE Cockburn Association of Edinburgh, which celebrates the fortieth anniversary of its founding, have issued a memorandum in the course of which it says: "The Cockburn Association has rendered substantial service to Edinburgh and to Scotland in the past, and the necessity for its continued exertions is as great as ever. Even during this calamitous war, the work of the Society cannot be suspended, because the war neither prevents the removal of historic buildings, which might be preserved without undue interference with public or private rights, nor the erection of new buildings, which, without modification, would prejudice the beauty and picturesqueness of Edinburgh. For example, at the present moment, the most serious danger threatens one of the quaintest and most picturesque feudal buildings in the Historic Mile between the Castle and Holyrood. This is Huntly House, opposite the Canongate Tolbooth, and unless it can be saved through the efforts of the Cockburn Association, backed by patriotic Scots, some of whom have already come forward, the house may any day disappear, to Edinburgh's irreparable loss."

THE proposals of the Fitzwilliam Museum Syndicate with regard to the Marlay extension, which, as we stated last week, is to be built on a property recently acquired, and adjoining the present Museum, have been discussed in the Senate. The question of material was the subject of considerable difference of opinion. The Syndicate's scheme provides for a brick building with Portland stone facings. Several members of the Senate expressed the view that the new building should be entirely of stone, or at all events that portion of it which will face Trumpington Street. It is now proposed that a general approval should be given to the Syndicate's proposals with regard to the extension "provided that such approval shall not prejudice the further consideration by the Senate of the question of the material to be employed for the exterior of the building." If this proposal is carried it will enable Messrs. Smith & Brewer, the architects, to begin at once the preparation of detailed plans.

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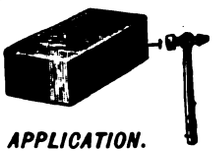
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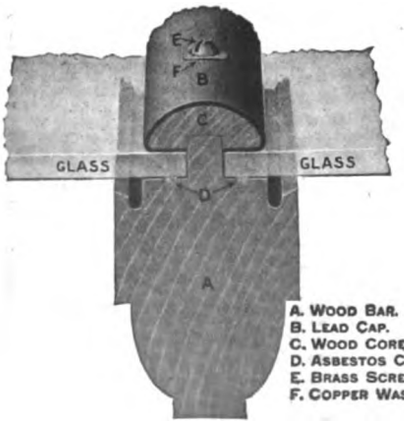
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THE
Architect and Contract Reporter.
FRIDAY, JUNE 11, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—July 27.—The Cleansing Committee of the Dublin Corporation invite designs from landscape designers, &c., resident in Ireland for laying out the reclaimed ground at Fairview, Dublin, and for the conversion of same into a public park. Premiums of £50, £10, and £5 will be awarded for the first, second, and third designs respectively, as selected. A copy of the conditions of competition, and a map of the site, will be furnished to each intending competitor on lodgment of £1, which will be returned on receipt of a design and report. Applications to be addressed to the Secretary, Cleansing Committee, Dublin Corporation, Lord Edward Street, Dublin.

STEPNEY.—The Borough Council invite architects to submit designs in competition for the proposed municipal buildings, and have appointed Mr. Henry T. Hare, F.R.I.B.A., to act as their assessor. Conditions of competition may be obtained after March 1 on receipt of £1 1s. deposit, which will be refunded on submission of a bona-fide design or the return of the conditions within fourteen days of their receipt. Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

CONTRACTS OPEN.

ALDERSHOT.—June 11.—For the erection of a corrugated iron building 50 feet by 30 feet with annexe 12 feet by 10 feet., Canadian or ordinary iron type, lined with ⅜-inch asbestos sheets, 9 feet high to eaves and 11 feet to collars, for the Urban District Council. Mr. Fred C. Uren, C.E., surveyor, Municipal Buildings, Aldershot.

ALNWICK. June 17.—For proposed addition, &c., to block 2 at the public slaughter-houses, Dispensary Street, for the Urban District Council. The Urban District Council Offices, Green Batt.

BINGLEY.—For the slater's, plumber and glazier's, plasterer's and electrician's work required in the erection of a detached residence at Bingley. Mr. F. Atkinson, architect, Penny Bank Chambers, Shipley, or Bradford Road, Bingley.

BLACKPOOL.—June 23.—For excavating and underpinning with brickwork at the central electricity works, for the Corporation. Mr. John S. Brodie, borough surveyor, Municipal Buildings, Blackpool.

BOOTLE.—June 18.—For alterations to existing lavatories, &c., at the secondary school for boys, Balliol Road, for the Corporation. The Borough Engineer's Office, Town Hall, Bootle.

BRADFORD.—June 19.—For the erection of a caretaker's house at Odsal House, for the Education Committee. The City Architect, Town Hall, Bradford.

BRISTOL.—June 18.—For (1) plastering, painting, &c., wards 27-28, 30-31, and 32-33, Eastville Institution; (2) painting, distempering, &c., officers' dining-room (No. 117), Stapleton Institution, for the Guardians. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

DELPH.—June 15.—For the erection of a shed, 51 yards by 50 yards, at Gateshead Mills, Delph, near Oldham. Messrs. J. Berry & Sons, architects and surveyors, 3 Market Place, Huddersfield.

DOVER.—June 16.—The War Department invite tenders for repairs and materials from July 7 till March 31, 1917, in the Dover district. Forms of tender, conditions of contract, and all necessary information may be obtained at the R.E. Office, Archcliffe Fort, Dover, by letter, addressed to R. P. Littledale, Colonel Commanding Royal Engineers, or in person, between 10 A.M. and 4 P.M. up to June 7. Tenders are to be forwarded to the Director of Army Contracts, War Office, London, S.W., by June 16.

EAST BIERLEY.—For erection of two detached houses and boundary walls in Moorhouse Lane. Mr A. T. Verity, architect and surveyor, Moordene, Bradford Road, Birkenshaw, Bradford.

EVESHAM.—June 19.—For additions and alterations to the administrative block at the Evesham sanatorium, for the Joint Hospital Board. Deposit £1. Mr. H. S. Harvey, architect and surveyor, Town Hall, Evesham.

FAILSWORTH.—June 18.—For the alteration of 93 privy closets to water closets, for the Urban District Council. Mr. W. M. Shimmin, C.E., engineer and surveyor, Oldham Road, Failsworth.

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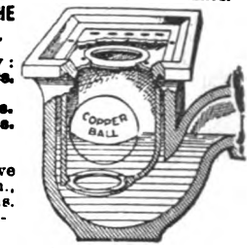


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GODALMING.—June 30.—For erection of a sanatorium at Highdown, Hyde Stile, near Godalming, Surrey, for the Metropolitan Asylums Board. Deposit £5. Mr. E. T. Hall, F.R.I.B.A., architect, 54 Bedford Square, W.C., and the Office of the Board, Embankment, E.C.

GRAVESEND.—June 17.—For the demolition of Nos. 9, 10, 13 and 14 Crooked Lane, for the Borough. The Borough Surveyor, Gravesend.

HADLEY.—June 15.—For repairs to the cemetery chapel. Mr. H. Walker, Gladstone House, Hadley.

HALIFAX.—June 15.—For the mason's, joiner's, plumber's, and plasterer's work required in connection with the extension of premises of the Halifax Equitable Benefit Building Society and Bank. Send names by June 15 to Messrs. R. Horsfall & Son, architects, Commercial Street, Halifax.

IRELAND.—June 14.—For the erection of one gatekeeper's cottage between Newbliss and Clones, and one gatekeeper's cottage between Essexford and Carrickmacross, for the Great Northern Railway Co. (Ireland). Deposit £1 1*s*. The Engineer's Office at Dublin or Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

IRELAND.—June 19.—For building four labourers' single cottages and for fencing four plots, for the Castlebar Rural District Council. A contractor may tender to erect all the cottages and fence all the plots or for such proportion thereof as he considers he could complete satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the Council's engineer under a penalty for delay. Charge 5*s*. The Clerk of the Rural District Council, Castlebar.

IRELAND.—June 21.—For building new sanatorium at Ballymaley, Ennis, for the Committee of Management, County Clare Sanatorium. Deposit £3 3*s*. Mr. W. H. Allen, C.E., The Terrace, Ennis.

LEEDS.—June 21.—For the erection of a two-storey building in Grape Street, Hunslet, for the Corporation. Apply to Mr. N. C. Hefford, manager, 1 Whitehall Road, Leeds.

LONDON.—June 17.—For the rebuilding of the Threadneedle Street branch post office, London, E.C., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s*. Mr. E. Cropper, H.M. Office of Works, 22 Carlisle Place, Westminster, S.W.

LONDON.—June 24.—For (a) alterations to drains at the St. James Road branch institute; (b) new small brick chimney to steam boiler at St. James Infirmary, for the Guardians of the Wandsworth Union. Mr. F. J. Curtis, clerk, Union Offices, St. John's Hill, Wandsworth, S.W.

LONDON.—June 30.—For repairs and cleaning works at the Eastern Fever Hospital, Homerton Grove, Homerton, N.E., for the Metropolitan Asylums Board. Deposit £1. The Office of the Board, Embankment, E.C.

MANCHESTER.—June 23.—For the reconstruction of the church organ at their Withington Institution, for the Manchester Guardians. The Master of the Institution, Nell Lane, West Dewsbury, Manchester.

MARGATE.—June 21.—For alterations to Messrs. Timothy White Co.'s premises at Northdown Road, Cliftonville. Messrs. Moodey & Chrisfield, architects, Station Gates, Broadstairs.

MIDGLEY.—June 15.—For reflooring portions of the above school. Mr. F. J. Macdonald, Education Offices, Sowerby Bridge.

NORTON (DONCASTER).—For the erection and completion of two houses, for Messrs. the Pontefract Co-operative Industrial Society, Ltd. Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

PAIGNTON.—June 23.—For the erection and completion of a bakery at Paignton, for the Paignton Co-operative Society, Ltd. Deposit £1 1*s*. Mr. F. W. Vanstone, architect, Palace Chambers, Paignton.

PORTSMOUTH.—June 14.—For plumbing and glazing work in connection with the Council schools during the ensuing 12 months as may be required from time to time, for the Portsmouth Education Committee. Mr. A. H. Bone, surveyor, Cambridge Junction, Portsmouth.

SCOTLAND.—For the mason, carpenter, slater and plaster works of new dwellinghouse at Upperhaugh Croft, Alford, for Mr. William Marnoch. Mr. J. F. Watson, Upperhaugh, Alford, or Messrs. Chalmers, advocates, 18 Golden Square, Aberdeen.

SCOTLAND.—June 15.—For the mason, carpenter and slater works of alterations, &c., to Longcrook Farm steading. Mr. A. Cameron, factor, the Seafield Estates Offices, Elgin.

SCOTLAND.—June 15.—For erection of not more than 150 dwelling-houses on the Roxburgh Street site, for the Greenock Corporation, each house to consist of two or three apartments, with scullery and w.c., in conformity with the local building regulations. The site is bounded by Roxburgh Street, Duncan Street, Holmscroft Street, and Captain Street. The Office of Public Works, Municipal Buildings, Greenock.

SHOTTON COLLIERY.—June 25.—For taking down, removing, re-erecting at Shotton Colliery and making good where required the iron school with slated roof, situated at Easington Colliery; also, separately, for taking down, removing, and re-erecting at Crook and making good where required the iron school with corrugated iron roof, also situated at Easington Colliery, for the Durham County Education Committee. The Clerk to the Education Committee, Shire Hall, Durham.

SILSDEN.—June 23.—For erection of stabling accommodation, for the Midland Railway Company. The Engineer's Office, Derby Station.

STEETON.—June 23.—For erection of stabling accommodation, for the Midland Railway Company. The Engineer's Office, Derby Station.

WALES.—For erection of a stack 80 feet high. For particulars apply to Mr. Rees Davies, Carmarthen.

WALES.—June 21.—(Contract No. 19) For the construction of a masonry retaining wall, about 335 yards in length, with carriageway and footway works and four-stall urinal, at Duffryn Road, Caerau, for the Maesteg Urban District Council. Deposit £1 1*s*. Mr. Samuel J. Harpur, M.Inst.C. and M.E., the engineer to the Council, 32 Commercial Street, Maesteg.

WILTS.—June 25.—For alterations, additions, repairs, and renovations, &c., at the various Council schools during the summer vacation, for the Wilts. County Education Committee. Mr. J. George Powell, county surveyor, Trowbridge.

TENDERS.

CAMPDEN.

For alterations and additions to house, High Street. Mr. W. L. LISSAMAN, architect and surveyor, Broadway, Worcestershire.

Kingerlee & Sons	£645	0	0
Drew	490	0	0
Knox	463	0	0
Espley & Co., Ltd.	435	0	0
Matthews & Mallis	395	11	0
STEWARD & Co., Broadway (*accepted*)	395	0	0

CHURWELL.

For the various works required in the erection of spinning shed at Lane Side Mills, for Sir Charles Scarth & Sons, Ltd. Mr. T. A. BUTTERY, Licentiate R.I.B.A., architect, Morley and Leeds.

Accepted tenders.

Pearson & Ainsworth, masons, Morley	£348	0	0
Lazenby Bros., joiners, Leeds	335	9	0
John Kellett, slater, Morley	83	3	0
Standard Patent Glazing Company, Ltd., Dewsbury, patent glazing	59	19	0
F. H. Hargreaves, plumber, Churwell	54	15	0
Jas. Tredale & Sons, plasterers, Bristol	15	0	0

COVENTRY.

For construction of a lavatory block and office extension, for Messrs. A. Herbert, Ltd. Mr. A. HERBERT, A.R.I.B.A., architect, Leicester and Coventry. Quantities by architect.

Sanitary Block.

Bentley & Co.	£860	0	0
W. H. JONES & SON* (*accepted*)	790	0	0
Hancox & Co.	770	0	0
F. Elliott	764	0	0

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Hancox & Co.	£3,990	0	0
Harris	3,685	0	0
Hallam & Co.	3,600	0	0
Elliott	3,495	0	0
W. H. JONES & SON, Coventry* (*accepted*)	3,434	0	0
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* Time, twelve to fourteen weeks.

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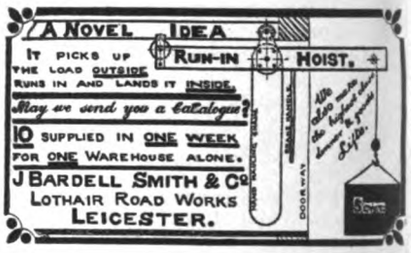
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HARROGATE.

For the various works required in erection of a residence at Leadhall Lane. Messrs. WALKER & COLLINSON, architects, Bradford. Quantities by the architects.

Accepted tenders.

Albert Hymas, mason, 1 Roseville Road, Harrogate.
T. Patrick, joiner, Clayton, near Bradford.
Sam Rushworth, plumber, Briggate, Shipley.
J. Tomlinson, plasterer, 1 King's Way, Harrogate.
J. Shepherd, slater, Dragon Road, Harrogate.

IRELAND.

For the erection of a disinfecting chamber and apparatus at the Fever Hospital, for the Waterford Corporation.

Costen	£722	0	0
Costello	710	5	0
Hearne & Sons	662	11	6
NOLAN (*accepted*)	588	0	0

LEYTON.

For the construction of a temporary fire station on portion of the permanent hospital site, Church Road, for the Urban District Council. Mr. E. H. ESSEX, A.M.I.C.E., engineer and surveyor, Leyton. Quantities by the architect.

Coxhead	£390	0	0
Harrison & Co.	340	0	0
Lown & Co.	325	0	0
Palmer & Co.	295	0	0
Municipal Contracting and Engineering Co.	280	0	0
Russell	245	0	0
J. & J. DEAN, Walthamstow (*accepted*)	230	0	0

NEWARK.

For the erection of a house at Kelham, near Newark. Messrs. SHEPPARD & LOCKTON, architects, Newark.

Builders' Work.

W. & H. Hopes	£1,164	0	0
S. & R. Horton	1,117	0	0
Parks & Son	1,015	0	0
Brown & Son	960	0	0
Renshaw & Wright	951	0	0
W. SMITH, Newark (*accepted*)	910	0	0

Plumbers' Work.

Watts	£240	0	0
Parks & Son	195	0	0
S. & R. Horton	186	12	0
Harvey Bros.	175	0	0
Ironmonger	173	0	0
A. SNAITH, Newark (*accepted*)	159	0	0

WELLINGBOROUGH.

For the erection of a factory, for the Ideal Clothing Co.

Drever & Son, Ltd.	£15,400	0	0
Adams	15,350	0	0
Smith & Bunning	15,250	0	0
Brown & Sons	14,485	0	0
Hickman & Sons	14,400	0	0
Henson & Son	14,348	0	0
Stevens	14,000	0	0
HACKSLEY BROS., Wellingborough (*accepted*)	13,929	0	0

THE Devon Education Committee have resolved that in future the price of building contracts should not be disclosed, but that tenderers should be advised that the lowest tender had been accepted, and that the unsuccessful tender was not within a certain percentage of the successful tender.

THE Dunfermline School Board last week considered the question of erecting a permanent school at Rosyth. Over a month ago the Board selected plans by Mr. R. H. Motion for a building, but deferred decision until it was seen whether the prices for building material would return to normal. It was now stated that a permanent school would be required at Rosyth in view of the rapid development of the Admiralty territory, and that it would not be premature to make a start. It was pointed out that while the original estimate was £12,500, the cost, with the increased price of material which had been raised about 40 per cent., would be £20,000. The Board not being fully represented it was agreed to delay consideration of the matter.

EDINBURGH'S SANITARY CONDITION.

IN his annual report, Mr. Allan W. Ritchie, the new Chief Sanitary Inspector for Edinburgh, states that the number of complaints made to the department by householders and others of alleged nuisances was 2,376. He comments on the value of regular inspection, which is indicated by the fact that no fewer than 4,053 accumulations of various kinds of rubbish, garbage, and filth were discovered in areas, cellars, vacant houses, and on roofs of outbuildings, &c. The number of houses in which the floors and the bedding and clothing were found to be in a dirty condition was 571. One-room houses found dirty numbered 191, two-room houses 318, and three-room houses 62. The cases of overcrowding of dwelling-houses dealt with by the department numbered 145, as compared with 211 in the previous year. Of the total cases, 64 were houses of one room, 76 were houses of two rooms, and the remaining five were houses of three rooms. The extent of overcrowding varied from one to six persons. In several instances as many as nine persons occupied a single-apartment house. In only six instances out of the total was the overcrowding due to the house being occupied by the members of more than one family. On 3,580 occasions the attention of occupiers had to be called to the dirty state of stairs and passages.

A large number of antiquated pan and hopper closets still continue in use throughout the city. These are frequently found in a foul condition; and when they are placed in dark, unventilated apartments in the middle of the building, which unfortunately is the case in many tenements, the conditions are still further aggravated. As a result of the efforts put forth in the past year, 452 modern closets were substituted; the lighting and ventilation of 223 water-closet apartments were improved; 72 water-closets were removed to more sanitary situations; and a considerable number were, at the end of the year, under arrangement for improvement. The need for the regular supervision of these sanitary conveniences can perhaps be best shown by stating that no less than 584 water-closets and sinks were found in a filthy condition.

The water supply of the majority of the houses in the city having still to pass through cisterns situated either within the dwellings themselves or in the attics, regular inspections of these cisterns require to be made to see that they are kept properly covered and clean. During the year 1,940 were found to contain an excessive amount of sediment. In 61 instances, where the situation of the cistern was considered unsatisfactory, the owners had the cisterns removed. All the cisterns inspected had been provided with satisfactory open waste discharge pipes, and none, therefore, required to be disconnected from drains. Cisterns were rendered unnecessary for dietetic purposes in 71 instances owing to the introduction of main taps into the dwellings.

With regard to "ticketed houses," the inspector explains that these are small houses, numbering 7,155, of one and two apartments, that have been measured, and have tickets placed over the doors to indicate the cubic space and the number of persons permitted to occupy them. To some extent this obviates overcrowding, but not always, as, in the course of 12,545 visits to these houses, 101 were found to contain more persons than that specified on the ticket. Inspection also revealed 361 houses having dirty floors, beds, and clothing, and 739 houses requiring the walls and ceilings to be cleaned. In 915 instances the sanitary appliances in connection with these houses were found in a filthy condition. All these matters were immediately dealt with.

By arrangement with the Edinburgh School Board, an inspector attached to the sanitary department, and whose salary is refunded to the Corporation, devotes his whole time to visiting the homes of dirty and verminous children discovered attending the board schools. During the year 451 cases, involving 645 children, came under his supervision. The results effected included the bathing of 307 children, and the disinfection at the city disinfecting station of the children's clothing and 70 sets of bedding. Prosecutions were necessary in five cases.

In addition to the inquiries made as to the sanitary condition of the premises where cases of diphtheria and enteric fever occurred, special investigations were made in connection with tenements in which phthisis occurred. Altogether 1,855 visits were made to the dwelling-houses of phthisis patients. Overcrowding was found in 15 of the houses, and dirty conditions existed in 63 houses.

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Representations were made to the Public Health Committee as to the uninhabitable condition of 131 houses situated in different parts of the city. Fifty-two were houses of one apartment, 66 of two apartments, and 13 of three apartments. The conditions upon which the representations were founded consisted of insanitary situation, damp walls, insufficient light and ventilation, insanitary and insufficient water-closet and sink accommodation, and general disrepair. The committee, after visiting the properties, held an open court, and pronounced closing orders on 127 of the houses. The remaining four houses were closed voluntarily by the owners. The inspector suggests, with regard to derelict properties previously closed as uninhabitable, and situated in rear of and obstructing the free light and air of the front tenements, that if the Corporation possessed power to demolish such obstructing buildings, after the lapse of a few months, much benefit would accrue to the inhabitants of the districts in which they are situated.

The common lodging-houses in the city now number 21 being one less than in the previous year. There is accommodation provided for 2,490 lodgers. The general conduct of the houses was satisfactory.

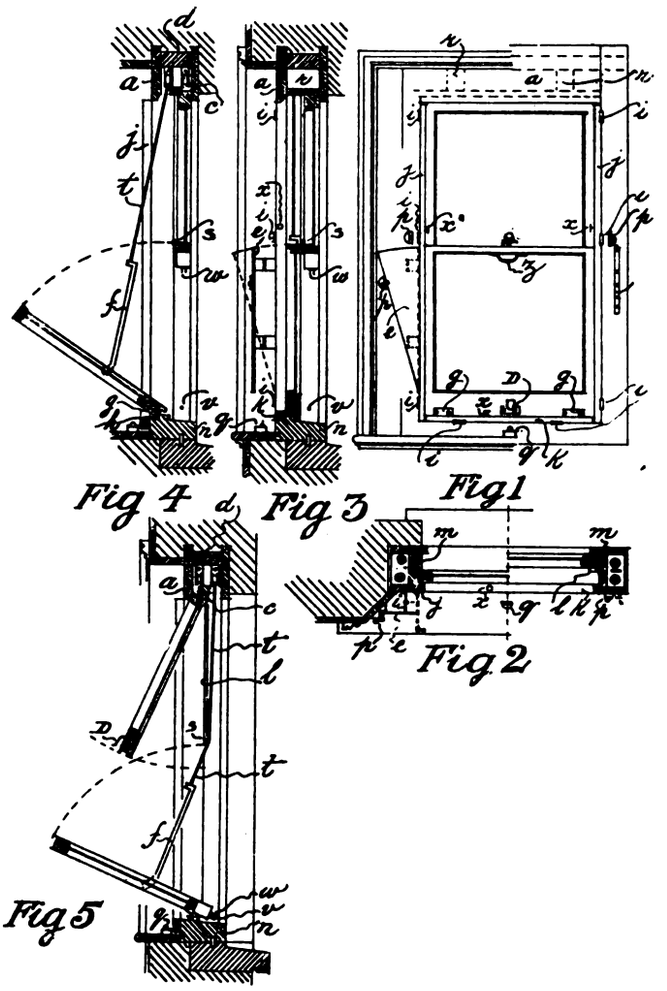
The farmed-out houses numbered 375, with accommodation for 1,376 persons, being 14 houses less than in the previous year. There were also nine houses let in lodgings with accommodation for 507 persons.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 8,926. April 8, 1914. Sliding window sashes and frames. J. J. Muller, 39 Cromwell Avenue, Highgate, London, N.—The object of this invention is to improve the sashes and cased frames and fittings so that top and bottom sashes can be turned on pivots at the bottom of same and the outside of sashes can be cleaned from the inside of the building, and the lower sash can also be retained in a slanting direction for ventilation. Fig. 1 shows an interior elevation of the top and bottom sashes closed and the cased frames. Fig 2, left-hand half, shows plan through bottom sash, and the other half shows plan through top sash and frames. Fig. 3 shows a transverse section through the top and bottom sashes and frame when the sashes are closed. Fig. 4 is a transverse section through the top and bottom sashes and frame, showing the bottom sash turned inside the building and resting on pivots at bottom. Fig. 5 is a transverse section, showing the top sash lowered and turned inside the building and resting on pivots at the bottom. The cased frames have the pulley stiles m rebated (shown in fig. 2) for the bottom sash to slide against. The pulley stiles are further notched out for about the height of the top sash, and projecting beads are fixed to the pulley stiles with cups and screws. A space is formed under the head of sashframe d by fixing wooden blocks r thereto, under which is fixed with screws to be easily removable a false head c. Each end of the false head c is cut away for about two inches to give space between pulley stile to allow the tops of metal stirrups f carrying the cords to pass and leave sufficient space between the bushed axle pullies. The top of inside lining of frame is in two heights, the lower one, having beaded edge below false head and being splayed off inside, is secured to blocks r with screws; this forms the top inside bead and is part of inside lining of frame a. At the bottom of the parting beads 1 pullies s are fixed to the pulley-stiles. The bead 1 is notched out for pulley s, and the front edge extends down below the bottom of pulley s; a pin is put through bead 1 and through the centre of pulley s. The pullies s must be fixed so that the metal sockets on stirrups f which are pivoted on the top sashes will pass underneath same; the cords (or chains) t run on the pullies s when the sashes are turned. The side beads j and the bottom bead k, of wood or metal, upon which is secured wooden beads, are hinged with spring hinges i to the inside linings; these beads can be opened out to allow the sashes to pass, and are secured by the ends of the turnbuckles p and q which are fixed with screws to inside linings and sill respectively. Turnbuckle q has projecting pivot in centre on bottom fitting into a hole in bedplate; on top of turnbuckle q is a handle which enables it to be turned through a quadrant. When the bottom bead k is opened out it can be secured by turning the turnbuckle q, the end of which will then butt up against it. The turnbuckles p are of the same construction except that they are capable, when turned, of entering into slots in metal plates fixed to the said beads j. The side beads j extend to the bottom of the bottom bead k, so that when the bottom bead k is in its normal position the side beads j are then secured. To turn the bottom sash inside the building (as shown in fig. 4), turn back the



bottom bead k and the side beads j by holding the knobs x; secure these beads by turning the turnbuckles q and p. Turn the turnbuckles pivoted to the metal sockets h over the pivots g. Then take hold of the meeting rail and pull sash down; the outside of the sash can then be cleaned. To turn the top sash inside the building (as shown in fig. 5), raise the bottom sash till it meets false head, turn back the bottom bead k and the side beads j by holding the knobs x, secure these beads by turning the turnbuckles q and p. Take hold of handle z on bottom of meeting rail of top sash, pull sash down till the sockets w engage with the studs or pivots v. Take hold of lift D on bottom sash and pull the lower part of sash forward to allow the top sash to be turned, then, holding top rail of top sash, pull sash down; the outside of the sash can then be cleaned. The sides of the cheeks e are pivoted and secured to spring hinges i; the other flaps of hinges are fixed with screws to inside linings. When not in use the cheeks e are held back by the end of turnbuckles n, which are secured with screws to window linings. The turnbuckles n are similar in construction to turnbuckles q previously described.—April 7, 1915.

KIDDERMINSTER Town Council have decided to apply to the Local Government Board for sanction to borrow £5,000 for the sewering of the added areas in the extended borough. The work is part of a scheme of sewerage and sewage disposal, which has been approved by the Local Government Board, and the estimated cost of which was £31,000, but the greater work is not to be carried out till after the war. The portion now suggested is urgent.

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PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 9,019. April 9, 1914.—Dated under International Convention April 12, 1913. E. J. Sweetland, Montclair, Essex, New Jersey, U.S.A. Pressure filters.

9,067. April 9, 1914.—H. W. M. Willett, Sloane Street, S.W. Machine or apparatus for cutting, dressing, or otherwise treating stone, wood, metal, or the like.

9,705. April 20, 1914.—E. A. Claremont, Broom Cottage, High Legh, Chester; John Stratton, The Lindens, Winton Road, Bowden, Chester; and C. S. Farmer, 62 Leedley Park Road, Salford. Cutting glazing bars and other implements with lead or other protective metal.

11,754. May 13, 1914.—William Ficklen, 402 1st Street, College Point, Queens, Long Island, N.Y., U.S.A. Reinforced structures and wearing surfaces of hydraulic, bituminous, or like cement, concrete, asphalte, or the like.

11,819. May 13, 1914.—A. C. Brown, Silent Street Works, Ipswich. Bathing or summer house.

22,903. Nov. 23, 1914.—Dated under International Convention July 24, 1914. Matilda Dennis, 21 North Terrace, Clifton Hill, Bourke, Victoria, Australia. Suction cleaners.

24,255. Dec. 18, 1914.—S. R. Parkes, Pretoria Works, Willenhall. Manufacture of quadrant stays for windows.

874. Jan. 19, 1915.—Dated Aug. 12, 1914. G. S. Mumford, architect and engineer, 1,328 Broadway, New York, U.S.A. Apparatus for constructing concrete walls.

1,353. Jan. 27, 1915.—P. M. Madsen, Arendalsgaten 16, Christiania, Norway. Cutters for wood-planing machines.

1,891. Feb. 5, 1915.—R. B. Grey, 5 Lloyd's Avenue, E.C. Mixing apparatus.

10,437. April 28, 1914.—J. K. Redman, 21 Rook Street, Barnoldswick, York. Dust shields for corners in buildings and the like.

10,687. April 30, 1914.—H. E. Mitchell, 5 Victoria Street, Westminster, and W. W. Nobbs, 71 Haverstock Hill, South Hampstead. Ventilation.

18,344. Dec. 28, 1914.—Herbert Hargreaves, St. James Row, Burnley. Revolving cowls for chimney tops and the like.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

MR. HENRY LEONARD HOLLOWAY, of Lewisham High Road, Deptford, and the Union Works, Church Street, builder and contractor, died on March 18, leaving £33,545.

THE Birmingham town clerk (Mr. E. V. Hiley) has received a letter addressed to the Corporation of Birmingham from Mr. P. Migouef, librarian of the Technical Institute, Petrograd, requesting information respecting the town-planning of Birmingham, and asking for documents generally dealing with the municipal work of the city. In reply the Town Clerk has forwarded to Mr. Migouef copies of the town-planning literature and plans of the town-planned parts of the city.

THE Royal Institute of the Architects of Ireland held an ordinary meeting of the Council at the Institute Rooms, 31 South Frederick Street, Dublin, on Monday, June 7. The President, Mr. R. Caulfeild Orpen, B.A., R.H.A., was in the chair. A considerable amount of correspondence was dealt with. It was decided to offer the usual prize of £10 10*s.* to members of the Architectural Association, Mr. C. A. Owen, B.A., F.R.I.B.A., having kindly consented to set the subject and act as assessor. A general meeting of the Institute will be held on June 21.

THE Executive of the Amalgamated Society of Carpenters and Joiners, it was officially announced on Tuesday, have approached the Executive of the General Union of Carpenters and Joiners, and invited representatives of the latter union to a joint conference for the purpose of discussing a scheme of amalgamation. The membership of the General Union is returned at 8,498, distributed over 169 lodges, and the membership of the Amalgamated Society at 91,114.

A LOCAL Government Board inquiry was held at Boultham, a suburb of Lincoln, last week, into the Rural Council's application for power to borrow £3,800 for sewage works. It was stated that originally a much larger scheme was contemplated, the expenditure being estimated at £21,600, but owing to the difficulty of raising loans at present a modified scheme was prepared. Mr. T. Howitt, the Council surveyor, explained the Boultham estate was being developed for residential purposes. There were already 191 new houses in existence. It was contemplated that eventually the scheme would serve about 3,120 houses.

AT the last meeting of the Council of the University College of Southampton the Principal reported that it had been found that the wet had penetrated the new College buildings at exposed places, having southerly and south-westerly aspects, and that the architects and the contractors had been in consultation with himself about the matter. Various waterproofing preparations are being tried so as to prevent the spoiling of decorative work as was now taking place. It was stated that the walls were built solid, and not hollow, in accordance with local practice—necessary because of the porous character of local bricks—and this was suggested as the cause of the wet penetrating.

THE Hull City Council have referred back a minute of the Health Committee, practically recommending that the Council engage in the supply of sanitary fittings, as being a step prejudicial to the interests of traders and ratepayers. The recommendation was made in connection with the compulsory provision of water closets. The Deputy Chairman of the Health Committee denied that any hardship would be done to the plumber, or that any new department of municipal trading was being created. There was no intention to open a shop and retail goods to plumbers. The Committee had agreed, where water-closets had to be provided in case of default, to purchase the fittings direct from the makers, and to supply them for fixing by contractors. The minute was referred back by 31 votes to 20.

AT the meeting of the Sheffield City Council on Wednesday last it was moved that the Estates Committee be instructed as follows: "(*a*) To prepare a scheme for the erection upon the High Wincobank Estate of the houses necessary to complete the development of such estate and to submit such scheme to the Council at its meeting in July next with a report as to the advisability or otherwise of proceeding with such scheme; (*b*) to report to the Council at its meeting in July next upon the advisability or otherwise of the Council acquiring sites in the working-class districts of the city under the enabling powers of Part III. of the Housing of the Working Classes Act, 1890, with a view to erecting dwelling-houses for the working classes thereon."

THE Birkenhead Town Council are about to apply to the Local Government Board for £68,500 for the erection of 299 dwellings on the Gilbrook estate. The estate is the property of the Corporation, and is situated at the north end of the borough. The estate was laid out in 1886, and the streets have been made, kerbed, and channelled. It is arranged to erect 10 blocks containing 64 houses, seven containing 40, 10 containing 60, and seven blocks of flats containing 120 separate dwellings, and two blocks containing 15 shops. On the ground floor there will be a living room 13 feet by 11 feet 3 inches, scullery, bathroom, food store, porch to front entrance, and on the first floor three bedrooms. The frontage to each house is 17 feet 6 inches, and the average depth, including yard and small garden plot in front, 57 feet 6 inches. Each block of houses will be supplied with hot water, and playgrounds provided for boys and girls. At the same meeting the Council decided to accept a contract amounting to £7,993 for the erection of the Thingwall Sanatorium, which the Local Government Board had sanctioned on the ground of public health.

THE strike in the building trade at Northampton, which commenced a month ago, was settled on Saturday, when the men accepted a war bonus of half-crown per week until three months after the termination of the war, when their original demands will be considered. The men asked for an additional penny an hour and a revision of the working rules. If a settlement had not been arrived at Northampton would very soon have been denuded of all labour in the trade. The demand for labour in various parts of the country is so great that men willing to leave Northampton have found it easy to obtain work at high wages. Of 140 carpenters and joiners who came out on strike 75 had found employment, and work had been offered for 80 other men; of 74 painters who "downed tools" only 14 were in receipt of strike pay on Saturday; 174 labourers out of 231 who struck found work, and there were jobs open for the remainder, while of the plumbers only the branch secretary remained in Northampton on Saturday.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Saturday, June 19.

Edinburgh Architectural Association : Visit to Melville Castle, Laswade.

Shakespeare Reading Society : Visit to the Tower of London.

Monday, June 21.

Royal Institute of British Architects : Presentation of the Royal Gold Medal, at 8.30 P.M.

Royal Institute of the Architects of Ireland : General Meeting.

Tuesday, June 22.

Palestine Exploration Fund : Annual Meeting in the apartments of the Society of Antiquaries, Burlington House, W., at 3.30 P.M.

Wednesday, June 23.

Town Planning Institute : Annual Meeting.

Thursday, June 24.

Institution of Municipal and County Engineers : Annual Meeting at the Institution of Civil Engineers (three days).

REINFORCED CONCRETE IN PRACTICE.

IN the carrying out of works in reinforced concrete there have been not a few examples of collapse, for the most part of buildings not completed and still in course of erection, and, although the failure has in some instances been traced to faulty design, in the majority of instances the catastrophe has been due to improper or inefficient workmanship. The constructor in reinforced concrete must not, therefore, suppose that he has learnt his craft completely when he knows how to make the necessary calculations and write the specification. There are many points in connection even with this latter stage that require special attention, and the practice of reinforced-concrete construction is, therefore, as important as, or one might say more important than, the theory. The architect and clerk of works must know how things ought to be done when the calculator's work is finished.

As reinforced concrete is a method of construction that is somewhat, if not entirely, novel to many of the workmen who are employed in its manipulation, it is worth while to take a little trouble so that all who are engaged in the actual building may be encouraged and helped to understand and take an interest in the work. Something more than mere shovelling concrete into forms, as if they were trenches, is required, and carelessness on the part of one workman, or exposure of a portion of the work to frost before it is set, may be the cause of a seriously weakened portion of the structure. A simple explanation of the principles—we will not say theory—of reinforced concrete given to the foreman will help him to explain to the ganger, and the latter to the actual workman, the different functions the materials fulfil.

With foremen and workmen who are not experienced in the practice of reinforced concrete, large scale drawings, showing exact sizes and arrangement of both concrete and steel, are imperative, and it should be strictly enjoined upon the operatives that rigid compliance with the details, particularly as regards the position of the bars, not only when they are first placed, but when the work is completed, is absolutely essential. In watching the concrete being put in, it is often found that not only the stirrups, but the main bars, become displaced, and it is necessary that all steel shall be properly tied to overcome this possibility.

Cleanliness is of great importance in the practice of reinforced-concrete construction. Water should be clean. In fact, it might be laid down as an axiom that none unfit for human consumption should be used for concrete. Ballast and sand should be meticulously free from the least trace of clay or dirt of any kind. Oil or any other materials of a greasy nature should not be allowed near steel or any other material on the works. If the steel should come in contact with oil or grease it is fatal so far as the adhesion of steel and concrete is concerned. Material of an oily nature in liquid form is sometimes used for coating the centering. This is asking for trouble, and work has been seen where not only the steel rods were covered with the material, but also the faces of the concrete where it was left temporarily. Only soft-soap made into liquid form, or whitewash, should be allowed close to the actual unfinished work, and then only in small quantities. The steel should have no coating of anything before it is put into position. Some experts recommend a coating of neat cement, but it appears that the adhesion of steel thus coated to the surrounding concrete is not so good as when it is put in without any coating at all.

The strength of the finished structure depends upon the quality of each of the materials used and their method of incorporation. The strength of each as a separate material is of utmost importance and considerably influences the ultimate resistance in the finished work. The strength of the concrete also depends upon the suitability of one material to another, such as the grading in size, the shape of the aggregate, the natural formation and ability to harmonise with, and be cemented by, the binding material, and to adhere freely to the steel, so that at completion, and when the concrete is dry, the whole is formed into one homogeneous mass without undue voids.

Although it is usual to regard concrete as being composed of ballast or aggregate and sand, mixed with cement and water, it should not be forgotten that it is highly desirable that the aggregate as well as the sand should be graded in size, and it would be well if the coarser material, instead of being defined simply as that which will pass a $\frac{3}{4}$ in. by $\frac{3}{4}$ in. mesh and be retained on a $\frac{1}{4}$ in. by $\frac{1}{4}$ in. were more definitely graded between these limits. Nor is it sufficient to stipulate that the sand shall pass a $\frac{1}{4}$ in. by $\frac{1}{4}$ in. mesh and be retained on a $\frac{1}{50}$ in. by $\frac{1}{50}$ in. The whole of the hard material should be graded. Thus the aggregate might be specified as the whole to pass a $\frac{3}{4}$ in. by $\frac{3}{4}$ in. mesh, one part to be retained on $\frac{5}{8}$ in. by $\frac{5}{8}$ in., two parts to pass $\frac{5}{8}$ in. by $\frac{5}{8}$ in. and to be retained on $\frac{1}{2}$ in. by $\frac{1}{2}$ in., three parts to pass $\frac{1}{2}$ in. by $\frac{1}{2}$ in. and to be retained on $\frac{3}{8}$ in. by $\frac{3}{8}$ in., four parts to pass $\frac{3}{8}$ in. by $\frac{3}{8}$ in. but to be retained on $\frac{1}{4}$ in. by $\frac{1}{4}$ in. The whole of the sand should pass a $\frac{1}{4}$ in. by $\frac{1}{4}$ in. mesh, and be graded to the following sizes: one part to be retained on $\frac{1}{8}$ in. by $\frac{1}{8}$ in. mesh, one part to pass $\frac{1}{8}$ in. by $\frac{1}{8}$ in. and to be retained on $\frac{1}{16}$ in. by $\frac{1}{16}$ in., two parts to pass $\frac{1}{16}$ in. by $\frac{1}{16}$ in. and to be retained on $\frac{1}{32}$ in. by $\frac{1}{32}$ in., two parts to pass $\frac{1}{32}$ in. by $\frac{1}{32}$ in. and to be retained on $\frac{1}{50}$ in. by $\frac{1}{50}$ in.

In proportioning the amount of water in concrete it is now generally recognised that a comparatively dry mixture is better. Not only does it allow of grouting where difficulties occur in filling in concrete around the steel,

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but concrete of a comparatively dry mixture matures more quickly and probably becomes permanently stronger. Moreover, it must be remembered that the water used has very largely to be evaporated as the concrete dries, and if there is an excess of water evaporated the concrete is apt to become spongy and more open in texture. Accordingly concreting in wet weather should be executed with the greatest amount of care and caution, or the concrete may become too wet, and undoubtedly would not be up to the high standard required in reinforced concrete work. Again, the action of the rain may separate the cement from the sand and coarse material either before or after the concrete is placed in position.

Considerable care must be exercised in the filling in and ramming of concrete in the forms or centering to avoid too great a mass of wet concrete being concentrated at isolated points, on the one hand, and improper temporary jointings, on the other. Particular care must be given to ensure that the concrete is filled in and rammed close to the steelwork so that the greatest possible adhesion may result, and at junctions of the steel where various members join it is generally found more satisfactory if the size of the aggregate is slightly reduced, as by lowering the maximum from ¾ in. to ½ in.

Such are some of the elementary points that have to be taken into account in the use of reinforced concrete in practice, but there are many others of equal importance, such as the testing of materials, which should not be confined to the cement and the steel, the arrangement and construction of centering, the preparation of steelwork, the striking of centering, the surface treatment and finish of concrete, the fixing of machinery, the testing of finished structures, contraction, expansion; but for these we may recommend the novice in reinforced-concrete construction to carefully study an excellent small handbook* by Mr. Alban Scott, recently issued.

NOTES AND COMMENTS.

WE learn from *Indian Engineering* that the idea of obtaining designs for any of the public buildings in the New Capital of Delhi by open competition has been abandoned and that all public buildings, except Government House and the Secretariats—the designs of which have already been entrusted to Messrs. Lutyens and Baker—are to be designed by the Government architectural staff at present employed under the orders of the Imperial Delhi Committee. Besides the Government House and the Secretariats the Government buildings likely to be needed for some little to come will consist only of residences and other buildings of a minor character; and the work of designing such buildings might reasonably be looked upon as part of the legitimate duties of a Government architect. Private firms and individuals obtaining leases of building sites will, we believe, be allowed to arrange with private architects for the designs of the buildings they intend to erect.

We regret to have to record the death at the age of eighty years of Mr. John Macvicar Anderson, past President of the Royal Institute of British Architects. Mr. Anderson, a native of Glasgow, was a nephew of Mr. William Burn, the architect of innumerable country mansions in Scotland about the middle of last century, who after carrying on his profession in Edinburgh came South, and practised it—he planned Montagu House in Whitehall—from the address in Stratton Street where Mr. Anderson succeeded him. During his apprenticeship with his uncle the nephew had the late Mr. Norman Shaw for a fellow-pupil. He was elected an Associate of the R.I.B.A. in 1864, a Fellow four years later, was its Honorary Secretary from 1880 to 1889, and after becoming one of its Vice-Presidents occupied the President's Chair from 1891 to 1894. His earliest buildings were, like his uncle's before him, private residences, among which may be particularly mentioned Lord Hillingdon's at Wildernesse; after 1888 he was more specially engaged on banks and insurance offices in the City of London. The British Linen Bank in Threadneedle Street, Coutts's in the Strand, the Commercial Union Assurance Company's offices, and those of the Liverpool and London and Globe Insurance Company, in Cornhill, are notable examples of his work. On settling in London in 1853 Mr. Anderson joined the Scots Church in Crown Court (where the pastor was still the remarkable man John Cummings), and he became its Session Clerk, an office he continued in the new church of St. Columba, which he designed, and of which he was really the founder and was afterwards a mainstay. He was Honorary Architect to the Royal Scottish Corporation and the Caledonian Asylum, interesting himself deeply and practically in these and other Scottish benevolent institutions. He was also a Fellow of the Royal Society of Edinburgh and a life trustee of Sir John Soane's Museum.

In a letter to the *City Press* Mr. John E. Yerbury points out very truly a serious aspect of the influence of trade union rules and "slacking" in the building trade. "A little study of the census of production report will convince those workers occupied in the building trade," writes Mr. Yerbury, "that they are directly responsible for much of the evil caused by the bad housing conditions of their poorer paid brothers. The net output in the building trade is £84 per person employed, while I estimate that the actual wage paid is about £80 per person—leaving £4 to pay all the charges on the trade, including profit. A long continuation of this state of affairs must mean bankruptcy to the building trade, and the sooner the workmen recognise this fact the better for them. In the iron and steel industry the net output is £115 per person, and in the railway carriage and wagon trade, £123 per person. I think the average wage and working expenses would probably be less in these trades than in building. But, however this may be, I am quite sure that the output in the building trade has declined as the wage has risen, and the present position of affairs is most serious."

Earl Loreburn, Lords Atkinson, Parker, and Sumner, in the House of Lords, gave a considered judgment in an appeal by Mr. Richard Farmer, surveyor of taxes, against interlocutors of the First Division of the Court of Session, in a case stated for the trustees of the late Mr. William Cotton. The question involved was whether the Windsor Buildings, 100 Princes Street, Edinburgh, were assessable to inhabited house duty.

The block was originally built as a dwelling-house, and at one time was used as a hotel. The rooms were now let out separately for business purposes. No one slept on the premises except a caretaker. The judges of the First Division of the Court of Session held that the premises were "divided into and let in different tenements" in the sense of Section 13 (1) of the Customs and Inland Revenue Act, 1878, and that each separate tenement had to be considered by itself for the purposes of inhabited house duty. That section provides that "Where any house being one property shall be divided into and let in different tenements, and any of such tenements are occupied solely for the purposes of any trade or business or any profession or calling by which the occupier seeks a livelihood or profit, inhabited house duty is not to be imposed upon these tenements which are occupied solely for the purposes of trade or business." From that judgment this appeal was brought, and as the decision would be equally an authority on this side of the border it became one of great importance.

Earl Loreburn said the Commissioners had decided that the premises in question were not divided into and let in different tenements within the meaning of the statute, and as their determination was conclusive unless it was erroneous in point of law there was no jurisdiction to

* *Reinforced Concrete in Practice.* A text-book for those engaged upon structural works. By A. Alban H. Scott, Member of the Council and Chairman of the Test Committee of the Concrete Institute, &c., &c. (London: Scott, Greenwood & Son. 4*s.* net.)

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review it upon any issue of fact. In his opinion, on the facts, the Commissioners had come to the only possible conclusion, and he moved that the appeal should be dismissed.

Lords Atkinson and Parker agreed in this view.

Lord Sumner said with great respect to the judges of the Court of Appeal, he thought their decision was wrong, and that the appeal should be allowed.

By a majority the appeal was dismissed with costs.

The London correspondent of the *Glasgow Herald* contributes a criticism of the latest eccentric group of painters, the Vorticists, whose inaugural exhibition has been organised in part of the principal room of the Doré Gallery. Mr. Wyndham Lewis, one of the protagonists of the new movement, contributes a note to the catalogue, in which he attempts to justify and explain the Vorticists' position. Rising superior to Dr. Murray's definition of a vortex—a mass of whirling fluid which swallows up or engrosses those who approach it—Mr. Lewis declares that by Vorticism the exhibiting members mean "(*a*) activity as opposed to the tasteful passivity of Picasso; (*b*) significance as opposed to the dull or anecdotal character to which the naturalist is condemned; (*c*) essential movement and activity as opposed to the imitative cinematography, the fuss, and hysterics of the Futurist." Casting behind them Post Impressionism, Futurism, Cubism, and one knows not what besides, this gallant band, in theory at any rate, seems to stake all on the unrepresentational rendering of energy. Stillness, even creative calm, stand condemned so far as one can gather. These artists are out for nothing less than to find the necessary formulas for our time, which, they hold, involve "scavenging away the refuse that has accumulated for the last century or so." Mr. Wyndham Lewis cannot be charged with lack of frankness. "There has never," he asserts, "been such a load of sugary, cheap, anecdotal, and in every way pitiable muck poured out by the ton—or rather, such a spectacle socially has never been witnessed before. There is not a little grocer in Balham, bromidic baroness in Bayswater (mark the alliteration), or dejected princess who has not a gross of artists closely attending to his or her needs." Æsthetically the Vorticists are aware of "the suspicion and puzzlement of the public" in looking at their works, for a full and detailed exposition of which we are referred to the forthcoming second number of their organ, *Blast*. Meanwhile we are told what is very obvious, that the totality of the impression received on a hot afternoon on the quays of some port—the smell of tar and fish, the heat of the sun, the history of the place, &c. —cannot be conveyed by an imitation of a corner of that place. This surely is setting up a man of straw in order to knock him down. Other negative statements in the catalogue note have curious positives interpolated. Thus, "The significance of an object in nature (that is, its spiritual weight) cannot be given by stating its avoirdupois. What a thing spiritually means to you can never be rendered in the terms of practical vision or scientific imitation." Long before the Vorticists were heard of William Blake, in a series of great designs by no means divorced from representation, demonstrated the value of the via media.

Most of the pictures and drawings by members are of geometric shape, and when not in black and white very positively coloured. One of the root questions is whether these geometricised abstract patternings convey, or to the unsophisticated spectator are calculated to convey, a more vivid sense of movement than recognisable interpretations, say, of the human figure. No doubt Mr. Roberts's picture "Jeu" does give a sense of direction and movement, but it wholly lacks the rhythm and living life of—to cite an example from the past—a figure by Michel Angelo. The Italian master worked on a re-creative plane, while surely Mr. Roberts, despite all his aims, is on a mechanical plane. Undoubtedly the issues are confused by giving representational titles to works which seek to avoid representation. Mr. Etchells, Mr. Wadsworth, and Mr. Wyndham Lewis himself are conspicuously represented by a number of these coloured patternings built up of stripes, planes, and abstract forms, with suggestions here and there of carpentered figures. Certainly these works entertain, but it is difficult to believe they form the starting point for fruitful endeavour. On the other hand, black and white drawings such as Mr. Etchells's "Hyde Park," which reminds us a little of a Bayonne tapestry, and Mr. Wadsworth's boldly simplified woodcut "Harbour of Flushing," are to be welcomed as genuinely pleasure giving.

4TH BATTALION "ARCHITECTS'" CENTRAL LONDON REGIMENT VOLUNTEERS.

DURING the last nine months all professions, trades, and callings have identified themselves with the work of our Army. Some 2,000 members of the architectural profession are now serving with the Colours, and others, who for one reason or another are unable to enlist, are serving their country at home in scarcely less useful ways.

Early last autumn, as the result of a conference initiated by the Royal Institute of British Architects at which all architectural societies were represented, after considering the best manner in which the resources of the profession could be utilised, the work of forming a War Service Bureau was delegated to the Architectural Association, and to it was entrusted recruiting for the Army and the training of Volunteers.

To secure united action in these important directions the Committee of the Volunteer Training Corps then formed approached the Surveyors' Institution, the Auctioneers' and Estate Agents' Institute of the United Kingdom, the London Master Builders' Association, the Junior Art Workers' Guild, and a Recruiting Agency (later recognised by the War Office) was started at 18 Tufton Street, Westminster, S.W.

Between 750 and 800 men have passed through this agency into the Forces; some 600 men have now been trained in the Corps, from which many men, unable at the beginning of the war to enlist, have now joined the Army, with the advantage of commencing their career with a knowledge of drill and military discipline.

The successful organisation of the Corps and its proved usefulness more than justifies an increase of its numbers, to which end a new company is being recruited, the headquarters of which will be at the Central Electric Supply Company's Generating Station, Lodge Road, St. John's Wood, N.W.

The headquarters of the Corps are at the Architectural Association, 18 Tufton Street, Westminster, S.W., and local headquarters have been established at Dulwich College, the Mercers' School, Holborn (by kind permission of the masters), and at the Architectural Association Sports Ground, Boreham Wood, Elstree.

Further drill centres will be arranged for new platoons in localities most convenient to members.

Some idea of the thoroughness and practical nature of the training can be gathered from the following summary of the instruction given: School of arms, gymnastics, physical drill and bayonet fighting; squad and company drill; musketry instruction, firing on miniature range; signalling and field engineering; cyclists', scouts', and ambulance work. Week-end and other camps are held periodically, at which advanced practical training in military work is given. The field engineering section recently erected a bridge 72 ft. long in seven working hours.

In addition to company and extended order drill, the members are instructed in marching by compass, map reading, route marching, day and night outposts, and long-distance signalling.

At the Easter camp the Corps were in billets in Epping Forest, and at Whitsuntide a most successful camp was held under canvas in Ashdown Forest, where the whole of the catering, cooking, and other camp duties were carried out by the members.

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The transport was most efficiently performed by the Battalion Transport Section.

It is proposed to hold another camp under canvas at the end of July and beginning of August, at which combined training with other battalions of the Central London Regiment (Volunteers) and many other corps will be held to complete and improve the value of the training and instruction already received.

At each camp the Post Office Engineering Corps Volunteers, whose members form a highly efficient signalling company of engineers, co-operated and greatly added to the interest of the training.

Every section of the Corps by its keenness and its efficiency reflects great credit on the activity and unceasing efforts of its officers, amongst whom the Corps is to be congratulated in the possession of its Commandant, Lieut.-Colonel Warden, of the Indian Army (retired), and of its Sub-Commandants, C. Stanley Peach and Major Monson, and its Adjutant, L. R. Guthrie, and many other well-known men.

The Corps is urgently in need of recruits to make up for the depletion of its ranks caused by men who have passed through it to more extended spheres of usefulness in the Regular and Territorial Forces of the country and to carry on and extend the work of recruiting and training men for these Forces.

All members of the architectural and surveying, auctioneers' and estate agents' professions, and the building and allied trades are eligible.

Enrolment forms may be had on application to the Adjutant's office, 10 Conduit Street, W., and should be returned to the Adjutant on completion.

LONDON COUNTY COUNCIL.

A STATEMENT of some importance to property owners in the Metropolis was made at this week's meeting of the London County Council in connection with the possibility of further Zeppelin raids over London and the consequent damage to property.

Lord Hill asked the Chairman of the Fire Brigade Committee whether his attention had been drawn to questions asked in the House of Commons by Commander Bellairs with reference to the control of the London Fire Brigade, and the responsibility for concerted action by the Brigade and voluntary effort for dealing with outbreaks of fire on a large scale, and whether there was any foundation for the suggestion that the Council desired to be relieved of their responsibility in the matter.

Mr. P. C. Simmons, Chairman of the Committee, stated that his attention had been drawn to the questions addressed to the Prime Minister. Continuing, he said: "I need hardly say they were put without my knowledge. Since Commander Bellairs was for a short time a member of the Fire Brigade Committee, and therefore may be thought to be speaking with some authority from the Council, I desire to say that there is no foundation whatever for the suggestion he made that the Council wishes the Government to take over the London Fire Brigade. The Fire Brigade Committee has neither the desire nor the intention to shirk responsibility. Arrangements have been made, after consultation with the Admiralty and the Commissioners of Police both for the Metropolitan area and the City, for dealing with any large outbreaks of fire which may occur through a Zeppelin raid over London, but it would not be in the public interest for me to make any statement as to what those arrangements are. It has been suggested that the Council should issue a notice to the public as to what they should do in the event of a Zeppelin raid, but after consultation with the Commissioner of Police it was thought undesirable that more than one official warning should be published, and, as members have no doubt seen from the statement made by the Prime Minister, it has been decided that the Commissioner of Police shall issue such warning."

On the recommendation of the Building Acts Committee, Mr. A. A. Fillary, District Surveyor for Streatham West, was appointed to the Greenwich district to fill the vacancy caused by the retirement of Mr. Conder. The following was the report of the Building Acts Committee on the subject:—

We have considered as to the arrangements to be made for filling the vacancy caused by the retirement of Mr. A. Conder, district surveyor for the district of Greenwich and Woolwich, as from April 8, 1915. On April 27, 1915, we reported that we had divided the district into two districts to be known as Greenwich and Woolwich respectively, the dividing line being the borough boundary. We have made temporary arrangements for the supervision of the two new districts until September 30, 1915.

To fill the vacancies in the districts we have invited applications from the existing district surveyors who are precluded from private practice and who are not over sixty years of age. No district surveyor applied for appointment to the district of Woolwich, but ten applications were received for the district of Greenwich. Seven of the applicants have attended before us, and of these we are of opinion that Mr. A. A. Fillary, district surveyor for Streatham West, should be appointed. Mr. Fillary has been a district surveyor since 1907. He has submitted his resignation of his present appointment conditionally on his appointment to the district of Greenwich. In the event of our recommendation being agreed to, we propose to make temporary arrangements for the supervision of the districts of Streatham West and Woolwich, as we are of opinion that no new district surveyors should be appointed whilst possible candidates are on war service. We recommend: "That Mr. Albert Anthony Fillary be appointed district surveyor for the district of Greenwich as from and including October 1, 1915, on the conditions laid down in Regulation No. 6; and that his resignation as district surveyor for Streatham West be accepted as from September 30, 1915."

ILLUSTRATIONS.

THE BANK OF VICTORIA, LTD. (AUSTRALIA), 69 KING WILLIAM STREET, E.C.

THIS building has been designed for the Bank of Victoria, Ltd. (Australia), as premises for the London branch of their business. The front is of Portland stone, with a base of Aberdeen granite. The main office on the ground floor is panelled in oak and surmounted with a domed plaster ceiling. Access is gained to the various floors by means of a granolithic stairway and an electric push-button lift with a wrought-iron enclosure. The lift enclosure and wrought-iron balconies on the front elevation were made by Messrs. Bainbridge Reynolds, and the steel casements were supplied by the Crittall Manufacturing Co. The contractors were Messrs. Patman & Fotheringham, and the fireproof floors were erected by the Kleine Patent Fire-resisting Flooring Syndicate, Ltd. Mr. O. P. Milne, F.R.I.B.A., was the architect.

THE NEW TELEPHONE EXCHANGE, LEEDS.

THE above building, of which we give an exterior view, is, we believe, the first telephone exchange erected in this country for the new automatic telephone system. The site is an awkward one in Basinghall Street, Leeds, to which it has a frontage of 105 feet, and frontages to the side streets of 90 feet each. The height from the basement to the flat roof is also 90 feet. In the construction every effort has been made to render the building as fire-resisting as possible, the only wood employed being the top layer of the flooring. The skeleton steel work weighs some 700 tons. A conspicuous and highly successful feature is the external use of Burmantofts "Marmo," which was supplied by the Leeds Fireclay Company, Ltd. Although the material has attained very extensive use, this is one of the earliest instances where terra-cotta of this type has been employed for a Government building. It is particularly appropriate that Leeds should be the first town to see it so used. There are six floors. The basement is given up to inspectors and workmen and storage purposes. On the ground floor is placed the large public office. The three floors above are occupied by the engineering and clerical staffs, with a dining-hall on the second floor. The topmost floor, which has an area of over 7,000 square feet, is entirely devoted to the automatic telephone switches. All the cables are brought into the building by underground conduits, and are taken right through up to the top floor. Messrs. W. Irwin & Co.,

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Ltd., were the general contractors. The sub-contractors were as follows: Slater, Jas. Season; constructional steelwork, Sam Butler & Co.; plasterer, Cowlin Hobson & Co.; painter, Chas. Fenton & Sons; asphalter, the Northern Asphalte Company; "Marmo" dressings, Leeds Fireclay Company, Ltd.

The building was carried out according to the designs of Mr. Chas. P. Wilkinson, of H.M. Office of Works.

ST. MARK'S PAROCHIAL BUILDINGS, NEWCASTLE-ON-TYNE.

ST. MARK'S Parochial Buildings, Newcastle, were recently erected and given to the parish by the late Mr. W. D. Cruddas; there is also a Men's Club behind the building shown in the perspective given by the same donor. The building consists of a hall on the ground floor, with classroom and conveniences adjoining, and also a large hall with open timber roof on the first floor. The front elevation is red brick with stone dressings and green slates. The late Mr. Hicks was the architect for the church, which was built several years ago.

HOLY SAVIOUR'S CHURCH, TYNEMOUTH PRIORY.

THE intention in the proposed extension of this church is to add aisles as shown on each side of the present nave westwards and build a tower. Part of the funds for this work have been raised, but owing to the war the scheme is now in abeyance.

ST. BARNABAS VICARAGE, NEWCASTLE-ON-TYNE.

THIS building has just been finished; it adjoins the Parochial Buildings, for which Mr. Arthur B. Plummer, F.R.I.B.A., was also the architect, and is in close proximity to the church.

WROUGHT-IRON GATES, MALPAS CHURCH, CHESHIRE.

THESE gates are excellent examples of wrought ironwork, for the leaves and general ornaments are very finely beaten, and are still well preserved, although they were erected with the graceful gate-posts in 1764.

The work is considered by Mr. Starkie Gardiner as local work, "and of unusual character." The conventional forms of ornament, however, appear to be quite orthodox, the wicket, perhaps, being novel.

The bolting of scrolls to the main members of the gates is very well done, the method of jointing being only seen when closely examined, for the small bolts have been skilfully countersunk, and with each repetition of a coat of paint the effect is hardly recognisable. This countersinking is evidence of good smithwork.

The crest-bearing angle is made of two bars, there being no one-piece angles in those days.

Compared with modern work, wrought iron executed by hand, as with these gates, has far more charm, for the marks of the hammers and various tools on the work lend it a subtlety and pleasing effect. The modern method of beating the various ornaments into swages is really not wrought work at all, but iron cast into moulds solid.

EIGHTEENTH CENTURY GATES, CLUTTERBUCK HALL, NORTHUMBERLAND.

SOME description of these gates will be found included on the drawing.

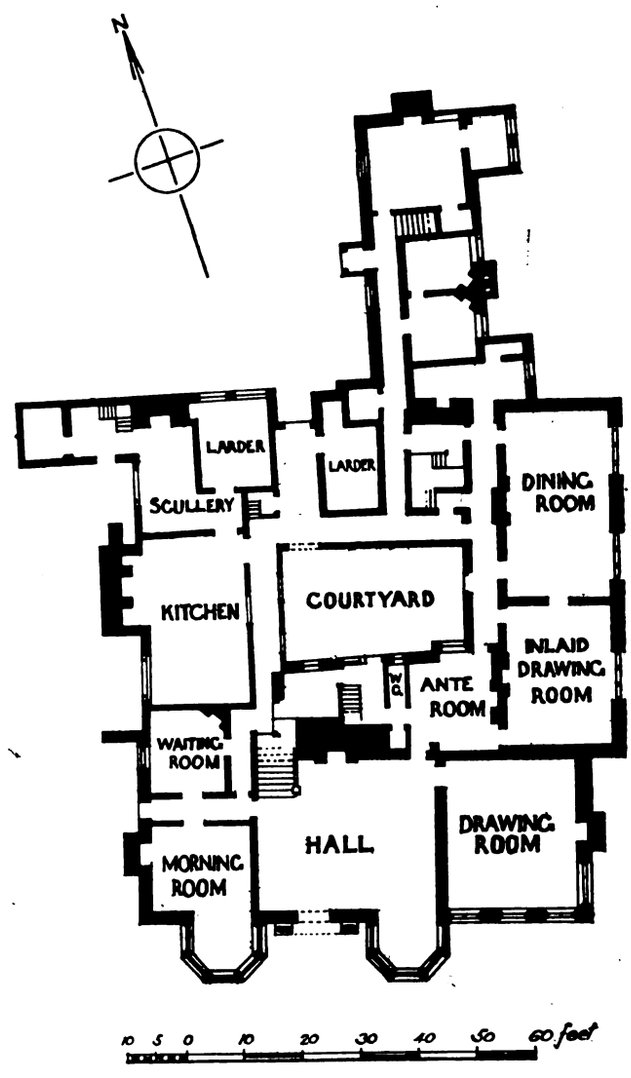
Two municipal deputations visited Cardiff last week for the purpose of inspecting the civic buildings in Cathays Park. The first came from Wallasey and the other from Glasgow.

A PORTRAIT of the late Mr. Charles Heath Wilson, A.R.S.A. and R.I.A., by Sir John Watson Gordon, together with a selection of pencil and water-colour drawings by Mr. Wilson, have been given by the family to the Kelvingrove Art Galleries in Glasgow. Mr. Heath Wilson was headmaster of the Glasgow Government School of Art (now the Glasgow School of Art) from 1850 to 1864, and honorary director from 1864 to 1869. He received his education in the old Government School of Design, Somerset House, London, and was appointed direct from London to Glasgow. After his resignation in 1869 he became partner with Mr. David Thomson, architect. On the dissolution of this partnership Mr. Wilson went to Italy, where he resided till his death. He was an excellent teacher, and anticipated in his organisation of the school many of the principles in art education now in operation. Together with other architects he was the founder of a museum of casts, which occupied a building in Bath Street.

ASTLEY HALL, CHORLEY, LANCASHIRE.

ASTLEY HALL is a handsome Elizabethan mansion situated in the well-wooded grounds of Astley Park, near the northern boundary of the town of Chorley, Lancashire. The river Chor, which gives its name to the town, flows through the grounds, and has been utilised to form a lake fronting the house on the east side. The mansion was erected at different periods. The north and west wings and also the south side of the courtyard date from the sixteenth century, and retain much of their original timber work. A picturesque timbered window with carved sill forms an interesting feature of the south side of the courtyard, and adjacent to it is a brick gable containing a large window which gives light to the landing. The courtyard itself measures 31 feet by 18 feet, and is partly flagged, but is now in a somewhat dilapidated condition.

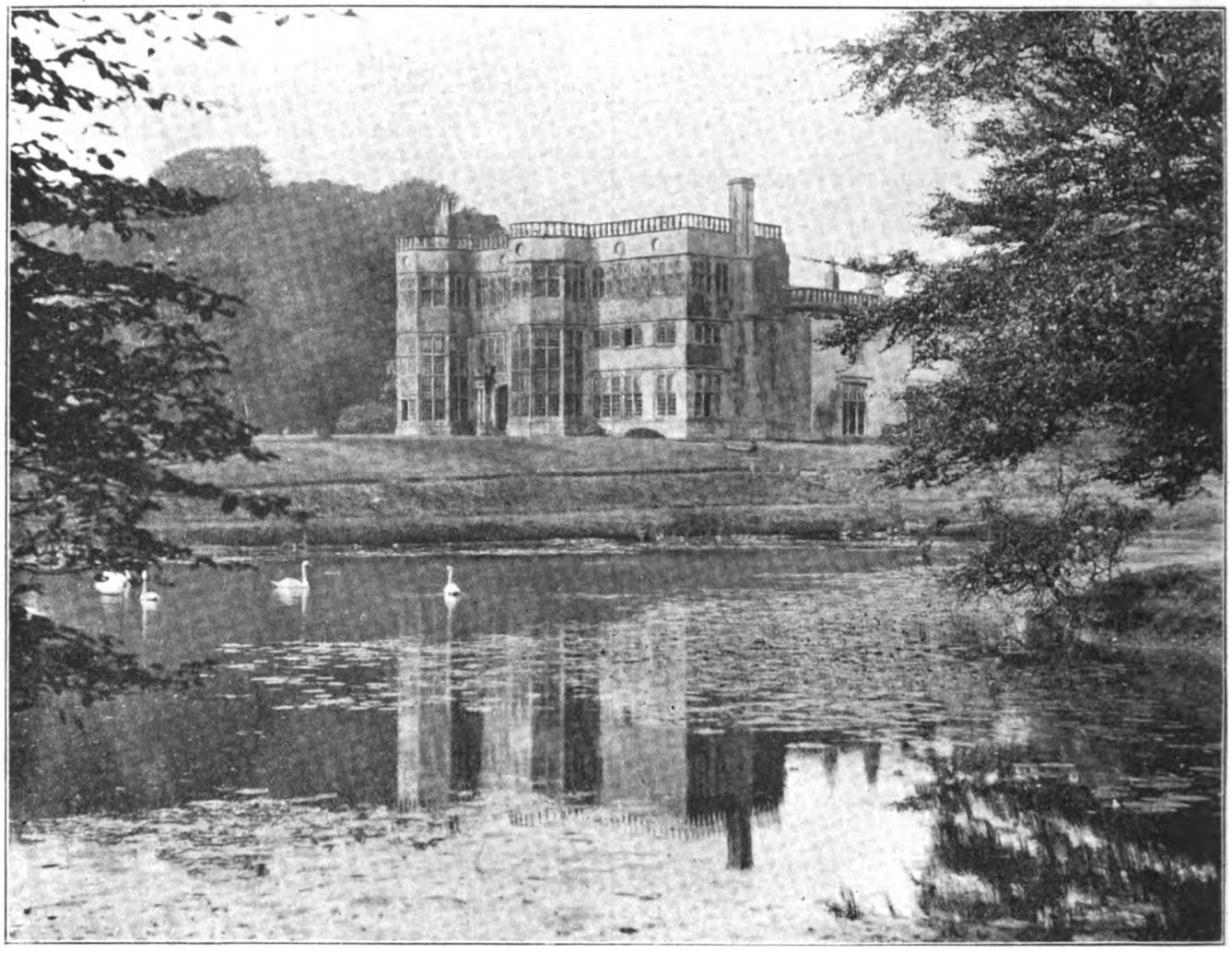
As originally completed in 1600, the house consisted of two storeys with half-timbered gables and stone roof, the entrance being approached through the gateway of the courtyard on the north side. The south wing, overlooking the lawn, is an excellent example of English Renaissance architecture dating from the middle of the seventeenth century,



GROUND FLOOR PLAN.—ASTLEY HALL.

and is of brick and stone, but the brickwork has since been covered with plaster. It is now the main front, and replaces the earlier portion which was pulled down and rebuilt on a more extensive scale, and raised to a third storey. This elevation at first sight impresses one by its slenderness of construction due to the continuous range of windows in the upper part of the building. Two octagonal bay windows continue to the full height of the roof, and provide the chief feature of the elevation. Situated between the two bay windows is the entrance doorway to the hall, which has a segmental head, and is flanked by double Ionic columns supporting an entablature, which is further surmounted by lions. The top of the building is completed with balustrading which hides the roof.

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[Photograph by Luke Berry & Son.

ASTLEY HALL.

The entrance hall is a very handsome apartment which is almost in the centre of the building; it is 32 feet long by 26 feet wide, and continues to the full height of two storeys. Its size is further increased by the inclusion of one of the large octagonal bay windows in the south-east corner. The surrounding walls are all panelled in oak to a height of 9½ feet. The panels, which are divided at intervals by fluted pilasters, have carved semi-circular heads, and contain portraits burnt into the wood. The portraits include, among others, Henry the Fourth, of France; Robert Dudley, Earl of Leicester; William, Prince of Orange; Queen Elizabeth; Columbus; Philip the Second of Spain; Sir Francis Drake. Opposite the entrance to the hall is the fireplace, which is an excellent piece of work, delicately carved, and having many enrichments. A fine oak staircase, which is a beautiful specimen of Renaissance work, leads from the north-west corner of the hall, the newels and balustrading being massive and elaborately carved. On the wall of the staircase are several portraits, including one of Cromwell. The ceiling is enriched with elaborate Renaissance plaster ornament, and divided by plaster beams into eight spaces. The deep frieze is also lavishly ornamented in plaster. In this room are two chairs bearing a large number of rings, which have not been added since the chairs were made, but have been carved out of the pieces of wood on which they hang.

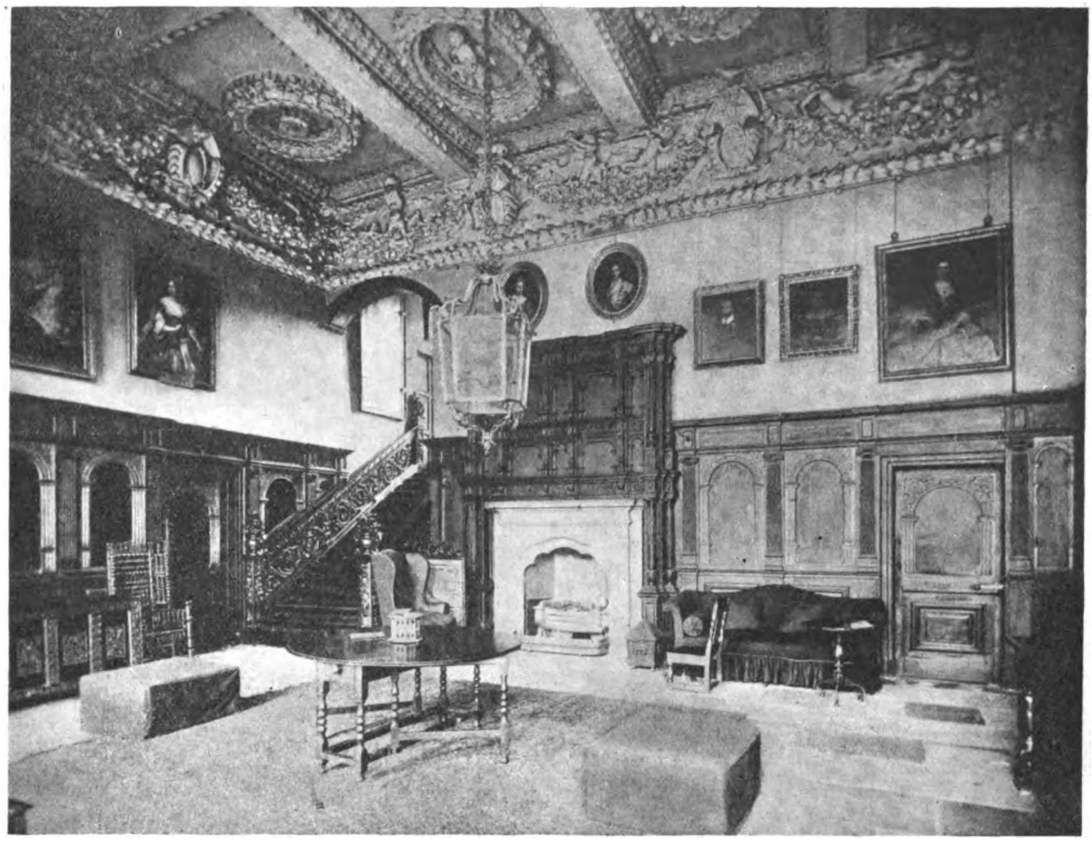
To the left of the hall, and at the south-west corner of the building, is the morning room, which is a charming little apartment, 17 feet by 15 feet. The walls are panelled in oak to within a foot of the ceiling, and are of good design. This room is lighted principally by one of the great octagonal bays, which adds to the beauty of the apartment as well as to the floor space; the ceiling is decorated with various mythological representations of birds and other figures, and there is a small ornamented plaster cornice. The fireplace has various ornamentations carved in relief, and is of excellent design.

The drawing-room is another fine apartment situated on the east side of the hall. Beautiful tapestries, representing the story of Jason and the Golden Fleece, provide the wall covering, whilst the ceiling, elaborately executed in plaster and leather, is even more luxurious and in higher relief than that of the hall, and gives one a good impression of the craftsman's art of the period. To the north of this is a rather dark apartment, which is entered from the hall and used as an anteroom. It has a carved fireplace and oak panelled walls. Adjacent to this room, but belonging to the east wing which is of eighteenth century date, is the inlaid drawing-room. Beautiful oak panelling, completely covering the walls and a fine overmantel, all inlaid, are the chief decorative features. A large square window opposite the fireplace affords an abundance of light to the apartment.

Beyond this room is the dining-room, the walls of which are panelled to a height of 7 feet 9 inches, and above is a plain plaster frieze from which hang several family portraits. Above this is a plain cornice, and the ceiling is also of plaster. The overmantel consists of oak panels flanked on either side with columns and pilasters. An excellent oak dining table and sideboard complete the furniture of the room, which is well lighted by two large windows overlooking the lake. A corridor to the west connects this room and the former one with the anteroom. The east side is of more recent date, having been rebuilt in the early part of the eighteenth century. To the rear of the main building is an annexe, which is similar in plan to a manor house, and has a separate entrance.

To the west is another wing consisting of a larder, scullery, and a very commodious kitchen, 26 feet by 16 feet, the plaster ceiling of which is divided by three oak beams, and the floor is flagged. This room is lighted from the west by a window of four lights, and from the east by borrowed lights, and the fireplace is 12½ feet wide by 4 feet deep. The scullery has a large chimney and a window of

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THE HALL.—ASTLEY HALL. [*Photograph by Luke Berry & Son.*

nine lights; it is separated from the larder by a division wall which is of recent date, as is also the corridor with lean-to roof connecting the kitchen with the courtyard.

Two bedrooms of considerable antiquarian interest are approached from the hall by the main staircase, and are situated in the west wing over the kitchen and scullery. The first of these rooms overlooks the courtyard, and also has a window facing the garden on the west side; here Oliver Cromwell is supposed to have slept after the battle of Preston in 1648. It is 18 feet long by 16½ feet wide, and contains a seventeenth century bedstead. The walls are panelled to a height of 7 feet 9 inches, and above this is a plaster frieze 1 foot deep. Over the fireplace is a design in plaster with the Charnock coat of arms in the centre, and the ceiling is decorated in the style typical of the period. The second bedroom has a coved ceiling of good design, but the walls are panelled in plaster and painted. It is lighted by a window on the west, and contains also a seventeenth century bedstead. Over the morning room and facing south is a bedroom which is lighted by one of the large octagonal bays; the decorations of this room are quite modern. Dressing-rooms are provided for all three bedrooms.

Situated over the drawing-room, in the south-east corner of the building, is another interesting bedroom containing an old oak four-poster canopied bedstead, on which Cromwell is supposed to have slept prior to its removal from the west wing. The walls are completely covered with panelling, and the dimensions are 22½ feet by 17½ feet and 9 feet high. The range of windows, continuing the full length of the room and overlooking the lawn, give the apartment a pleasant southern aspect, and a dressing-room is attached. Several interesting pieces of furniture of seventeenth century date are also in this room. The bedrooms in the east wing are not very interesting.

The long gallery, extending across the whole width of the south front, is a fascinating chamber, which has a continuous range of mullioned windows with leaded lights along the whole front, and continuing round both ends. The dimensions are 72 feet by 12½ feet, and this width is increased by the two recesses formed by the octagonal bays, which would provide pleasant retreats during the entertainment of dancing. In the centre of the chamber is an old shovel board or shove-groat table, which is splendidly carved. Other fine specimens of old furniture are also there. The walls are completely panelled in oak, and at the east corner an angle fireplace is situated. The gallery is approached from the landing in the east wing by ascending to the third storey, and close by the entrance is a door giving access to the stairs leading to the roof.

Generally speaking, the mansion is in a good state of preservation, but the older portions are unfortunately showing signs of decay.

Astley was for centuries the property of the Chernocs of Chernoc, one of whom Robert Chernock, left an only child, Margaret Chernock, by whose marriage the property passed to the Brookes, of Mere, and eventually, by the marriage of the sole heiress, Susanna Brooke to Thomas Townley Parker, Esq., of Cuerden, the property passed in 1787 to her son Robert Townley Parker, Esq. Through his son Thomas it descended to the present owner, who is R. A. Tatton, Esq., of Cuerden Hall, near Preston.

THE SOUTH WALES INSTITUTE OF ARCHITECTS.

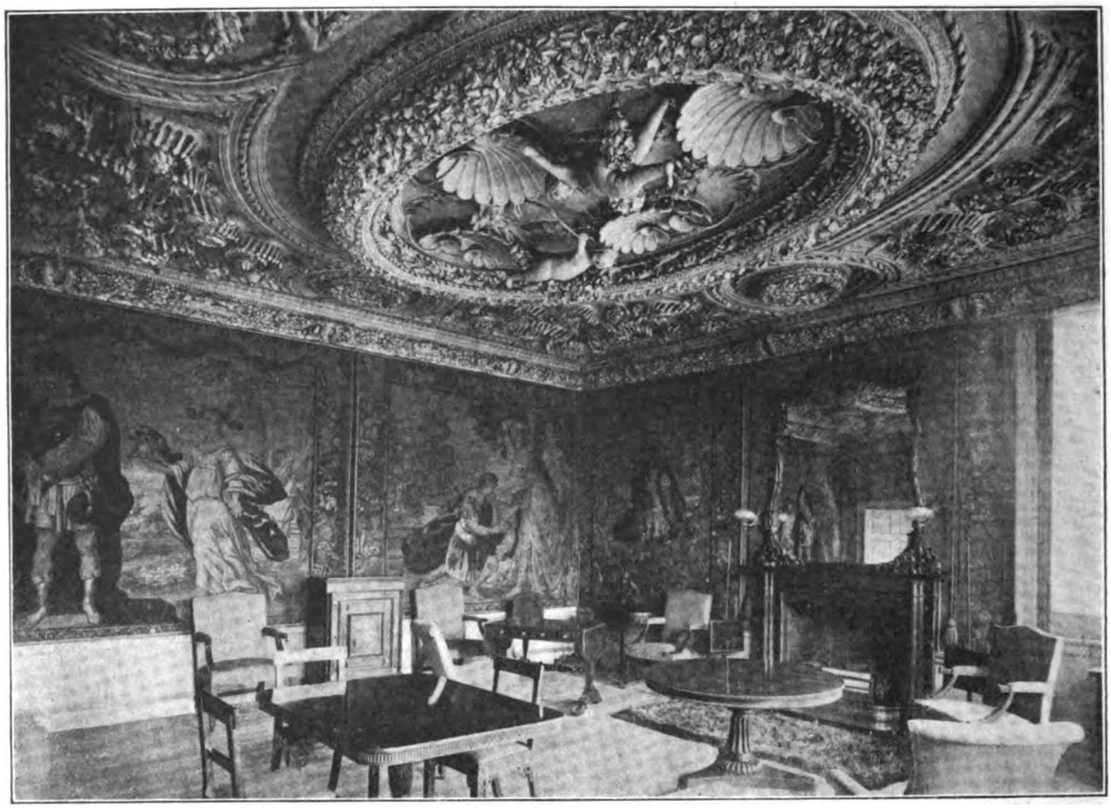
ONE of the most interesting of visits was made on June 5, when the President and members of the above Institute and friends, with the kind permission of the most Hon. the Marquis of Bute (honorary member of the Institute), went to inspect the Roman work, particularly the most recent discoveries within the Cardiff Castle grounds, under the guidance of Mr. H. Sesom-Hiley, Licentiate R.I.B.A., the architect and archæologist to the Castle.

After assembling in the grounds, a start was made outside and on the right of the entrance gates, where a trench had been made in January last exposing a long length of Roman wall from the footings to about 10 feet high, and in a good state of preservation, particularly the lower courses, doubtless protected by the original bank, in the corner next to Messrs. Roberts's shop.

The face and line of the wall could now be seen extending close to the entrance, evidence that there were no towers here, as had been supposed similar to the North gate, only a gateway, also proving a slight bend in this southern wall.

Many other interesting features were pointed out, such

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[*Photograph by Luke Berry & Son.*

THE DRAWING ROOM.—ASTLEY HALL.

as the site of Preece Richard's house, &c., now quite a rubbish heap, but which contain many relics of bygone days.

We then returned to inside the grounds to a hole excavated at the back of Hicks, chemist, Duke Street, where a portion of the 10-foot and 8-foot wall was found, some 2 feet back from the inside face of the present mediæval wall, showing that the latter turned inwards some distance at the south-east corner and did not follow the lines of the Roman wall; also indicating the encroachment of the Duke Street property. It should here be stated that in February by a lucky coincidence the lower part of the intermediate bastion and a portion of the adjoining main wall was also found at the back of Duke Street Chambers, thus proving the original existence of the other bastion west of the main entrance.

The next point visited was the south-east corner, where the largest excavation has been made, and the most important discoveries brought to light at the end of 1913 and the early part of 1914.

Some portion of the corner bastion was exposed about 1887, in extending the backs of business premises, and a part of the front wall also was cut away in building the engine-house for generating the electric light for the Castle.

Excavations were then made (1913 and 1914) further along the front of the wall, portions of the outbuildings removed, a tunnel made towards the corner exposing the lower courses of wall and bastion.

Next a hole was dug in the top garden, when a part of the inside wall was struck, and then by an amicable arrangement with the tenants the work was extended on the outside and revealed the lower portion of the wall for about 40 feet, all in a wonderful state of preservation.

The garden excavations were continued to the bottom to a depth of 25 feet square, with the result that the whole of the walls and corner bastion were laid bare for a length of 50 feet on either face (east and south), showing a large curved inside face with two sets of offsets quite different to the other walls, suggesting very strongly that this must have been the section for the whole of the work forming the Roman castellum, and contemporary with that of Cærwent (Venta Silurum), which should have an important bearing in the eventual restoration of this and similar work.

The portion of the facework at the back of Lewis's, the printers, workshops was next examined, which extends for about 20 feet and is 12 feet high, where it was pointed out that the lower courses, being protected by the original bank, retained their sharp arrises and quarry face, whereas the upper courses showed indications of considerable attrition, suggesting the action of tidal waters in the reens which no doubt existed to convey material to the site, in addition to the action of the ordinary elements.

It was mentioned that the bottom of footings was about 3 feet below the level of Duke Street.

The whole revealed a magnificent stretch of masonry, wonderfully well preserved, considering its age from about the second century of the Christian era, thoroughly characteristic in its style and period, and quite worthy of all reverential care and restoration.

It is being very carefully restored, and is now built up to a height of about 25 feet, where it remains for the present, owing, we are informed, to the war and other causes.

We understand it is the intention of Lord Bute to form a large chamber in the inside corner by means of retaining walls, to be roofed with concrete to the level of the ramparts, and to obtain access from the adjoining corridors for the purpose of inspection.

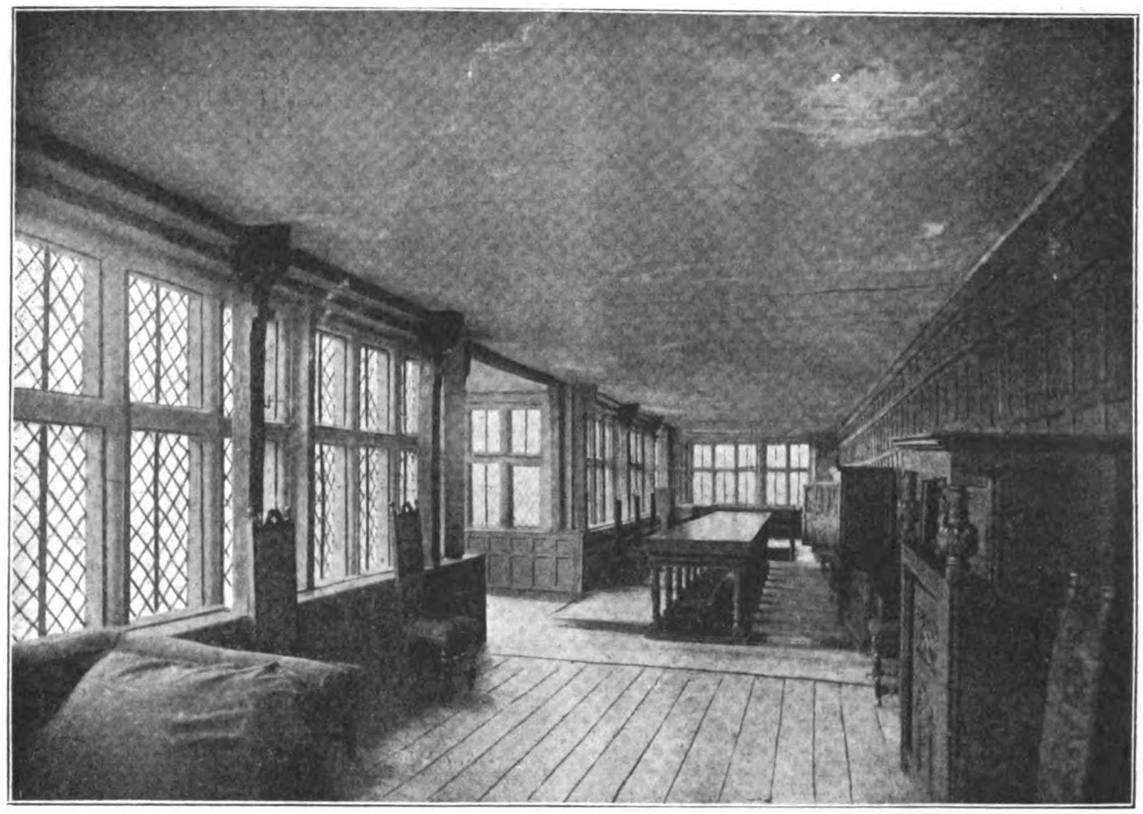
As this corner will always be most prominent when the Duke Street widening is completed, a fervent hope was expressed that the corner bastion should be carried 3 feet above the others for that purpose.

The once dominating mound has also been reduced about 15 feet, with the idea, when finished, that it should be more in scale with the adjoining features.

The party next visited the covered corridor, east side, where were displayed on large wood trays and glass cases huge quantities of different relics found during the several excavations, all of which evoked much interest and comment.

Amongst them were numerous bits of red glazed "Samian" ware, black ware, a bronze fibula of bow shape —late Celtic or early Roman design—green vitreous beads, a mill-stone or Roman quern, several coins—the earliest found dating from Nero A.D. 58 to Valentinian II. 373. A vast quantity of Slip, Dutch, Cologne, and other ware, old glass, tobacco pipes, and other relics of the sixteenth, seventeenth and eighteenth centuries, all of which were unearthed in the top of the mound.

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THE LONG GALLERY.—ASTLEY HALL. [*Photograph by Luke Berry & Son.*

Retracing our steps to the Black Towers, we were notified of the discovery of a vault or cell having its south wall of Roman work, the inner face of which could be seen level with the ground nearly as far as the Clock Tower. Here was shown another fine example of masonry and facing, and a good deal of the adjoining work—including corner bastion, &c., which was cut away by Burges to build the Clock Tower.

In the kitchen, the core of the west wall was to be seen in the well-hole of the service lift, and a good deal of the original facework in the adjoining wall after removing the plaster and an old fireplace, all conclusive evidence with other data of the existence of Roman work throughout almost the entire length of the west side of the Castle area.

The new nursery towers, built of grey, blue, and brown forest stone, with its picturesque and decorated open timber roof covered with green slates, and the other additions and alterations, all quite Burgesque in style, were much discussed and generally admired in passing.

In crossing the grounds towards the North gate, it was mentioned that just in front of the north wing of the Castle, when cutting a trench about 3 feet deep in 1912, a Roman road was struck formed of iron slag similar to that found under the archway of the North gate about 1890.

Proceeding through the latter (to which we returned later on), we were shown the north wall and bastions partly restored in stone and some in wood as far as and including the new mediæval tower in the west wall, the latter designed to link up the Roman with the mediæval work, access being controlled by a portcullis and drawbridge at the end of the rampart next to the new tower.

The several walls, bastions with their parapets, are shown lowered in these temporary erections, though not strictly correct and in keeping with Roman work, but, owing to the great fall of the ground, and to afford a better view from the extensive grounds on the north, it will form quite an architectural innovation, and, as suggested by Lord Bute, will no doubt receive approval generally.

Returning to the Roman North gate, this important feature was uncovered about 1890, and restored 1904, more in the mediæval than the Roman style.

It has, since 1911, been remodelled and restored up to roof level, more in consonance with the data of Roman work, though even with the parapet complete, will appear rather squat in contrast with similar work and features.

It forms, however, an imposing structure with its pentagonal towers, semi-circular archways and openings, adjoining guardrooms, all carried up to its full height from the inner face of the main wall (as originally, and proved by the nature of the foundations), and not, as previously, from the inner face of parapet walls.

Temporary doors in deal, 6½ inches thick, are fitted to the openings, and swing in cast-iron convex-surfaced pivots and sockets fixed in the bottom to the old socket stones found *in situ*, and at the top in dovetail-shape sockets in projecting stone blocks.

The eventual doors will be of oak, and same thickness, secured at centre with locks of a Roman pattern, and also by a wood pole or bar 6 inches square, pushed into holes on either side, close to the door of the main walls of the gateway.

At the back of the bastions to the west and east (the latter by means of a heading in the bank) of this gate were to be seen the offsets continued through, proving that the bastions were built up on the front face and not from the back of the main wall, as had been conjectured.

Here, now, on tables were shown numerous drawings—old and new—wood models for completing the south-east corner, and complete model of the Roman gateway, photos of Roman walls, bastions, &c., sketch designs for a new mediæval tower, and cross wall from same to the Keep, and for the final completion of the whole of the Roman work, all of which were explained and generally discussed.

A complete model has recently been finished to the scale of 8 feet per inch, showing the whole of the above work when completed, also the Castle buildings, including new entrance towers, &c.

A general wish was expressed that now, having the necessary data and details, that soon, under better and more peaceful conditions, this important work will be resumed, continued and completed, which cannot but reflect great credit for the enterprise of its noble owner.

In conclusion, a very cordial vote of thanks, proposed by the President (Mr. Vincent Evans), seconded by Mr. Teather, and carried with acclamation to the Marquis of Bute for his kind permission, and to Mr. Hiley for his guidance and explanation, and the latter suitably responded.

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Amongst those present were the President, Messrs. G. Vincent Evans, H. Teather, Ivor Jones, David Morgan, J. Cook Rees, Neath, T. E. Rees, C. H. Kempthorne, J. W. Rodger, Alwyn Lloyd, D. Lleufer Thomas, S. W. Allen, Oliver Purnell, Mr. Spiridion, J. Barry, Llewellyn Jones, Andrew Brown, and others.

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

By the courtesy of the Baths Committee, the City architect, Mr. Arthur Dale, invited the members on Thursday, June 10, to inspect the Muskham Street Baths.

Mr. Dale first showed the plans, and explained that the main problem to be considered was to erect a building to be used as a swimming bath for both sexes in the summer, and to be easily converted into a hall for meetings or cinematograph exhibitions in the winter.

This necessitated careful planning of entrances and exits, &c.

Mr. Dale conducted the party over the building, pointing out the movable floor framed on trestles, and the dressing-boxes, which neatly fold back on to the wall when the swimming bath is to be used for meetings.

The heating and ventilating system was described and shown, the calorifiers and all pipes being in a well-lighted subway around the bath, thus being easily inspected and repaired at any time.

Afterwards, by permission of the officer commanding, Mr. Dale took the party to the Meadow Schools, which his department have converted into a temporary hospital for wounded soldiers, and although not yet occupied, the buildings are now fitted up and are quite ready to receive patients at a moment's notice.

Without unnecessarily interfering with the buildings, doctors' and nurses' rooms, lavatories and *x*-ray room, and special sanitary apparatus have been fixed.

The President, Mr. Harry Gill, conveyed the thanks of those present to Mr. Dale for taking them round, and complimented him and his staff upon the excellent planning and care shown upon all they had seen. Mr. Shelton endorsed this, and Mr. Dale suitably replied.

The members were afterwards entertained to tea by Mr. Dale at the Trent Bridge Café.

RECENT ADDITIONS TO THE VICTORIA AND ALBERT MUSEUM.

THE educational authorities have just issued their annual illustrated "Review of the Principal Acquisitions, 1914," and the perusal of it is of the greatest interest to all art and book lovers, and to architectural students in particular. It gives an account of the more important additions made to the collections during last year, whether by gift, bequest, or purchase, arranged according to the departments to which they respectively belong, and a section dealing with the principal loans is also included.

Of the departments of ceramics, metal work, painting, and textiles we have not space to say more than they have received some most beautiful additions, among which must be mentioned the silver-gilt bowl and cover of late fourteenth-century work from Studley Royal Church, Ripon; the Rokewood Mazer; and a fine silver-gilt altar-cross with panels of translucent enamel, of late fifteenth-century Spanish work. We will therefore briefly review the additions made to the Library and the several architectural departments.

A very important note is prefaced to Mr. Martin Hardie's list of the acquisitions made in the Department of Engraving, Illustration, and Design, which we quote and commend to the attention of all architectural students: "While actual objects, such as goldsmiths' work of the Renaissance, English furniture, &c., are becoming more and more scarce, and are in consequence commanding prices that in many cases place them beyond the reach of the museum, it is of the highest importance that students and the public should be provided with original designs. These drawings are being supplemented by copies to scale of stained glass, mural painting, ironwork, &c. One of the main functions of the department is to serve in this way as a bureau of information for students and for officers of the museum as to historic ornament and design, and endeavours are continually made to strengthen the department on this side of its development." One of the chief features of the department for students to remember is the great collection of original architectural drawings founded as a memorial to Mr. Phené Spiers, which is yearly increasing by the addition of Pugin student, silver medal, and other prize drawings, and original drawings and designs made by leading architects. Great additions have been made this year to this by gifts from Mr. Phené Spiers himself of measured drawings of Gloucester, Lincoln, Canterbury, and Chichester Cathedrals, and details of the "Gilt Room" at Holland House, by C. J. Richardson. Besides these, drawings by Messrs. Nesfield & Shaw for the restoration of the church of King's Walden; by Mr. Somers Clarke, of the design for the reredos and pulpit of St. Martin's, Brighton; and a collection of over 200 drawings of encaustic tiles used in his restorations by Sir Gilbert Scott have been presented by other donors. Among the purchases is a set of 283 original drawings made about 1860 by George Bonet,* of Caen, for Mr. J. H. Parker, of Oxford; two volumes of drawings of Italian buildings and decorations, made about 1770 by Richard Norris, surveyor to Christ's Hospital; and four pencil architectural drawings by Samuel Prout.

To the Library itself several beautiful specimens of bookbinding have been added, as well as three autograph letters from Alfred Stevens, Sir Digby Wyatt, and Isambard K. Brunel. For the architecture and sculpture department have been acquired some particularly fine French woodcarving, a great head of Buddha in granite of early Chinese work, and, most important of all, the magnificent collection of his own sculpture presented by Monsieur Auguste Rodin.

THE RECENTLY-ENACTED NEW YORK STATE REGISTRATION LAW.

OF the many registration laws governing and regulating the practice of architecture in various States, says the *American Architect*, none more clearly defines the status of the profession in its relation to building operations than the New York law which received the approval of Governor Whitman on May 3, and took effect immediately.

This law, the full text of which is printed herewith, is the result of co-operation between a representative committee of the three architectural bodies in the State and the committee of the State legislature.

For a period of six years the joint committee of architects has been engaged in an effort to secure a law that would be, as far as knowledge of the necessities of architectural practice could suggest, unassailable, and one that would take the administration of it out of political influence.

The placing of the administration of this law under the control of the State University is intended to operate as a guarantee of efficiency.

With this law now in force, the practice of architecture in the State of New York may be expected to regain certain dignities of which it has been deprived by reason of the activities of a class that is now, or soon will be, eliminated.

Members of the profession and other citizens of the State are particularly fortunate that this matter has all along been in the hands of a committee so thorough and so steadfast in its purpose as to accept no "makeshift" or compromise.

The text of the law follows:—

ASSEMBLY BILL NO. 1149.

AN ACT TO AMEND THE GENERAL BUSINESS LAW TO REGULATE THE PRACTICE OF ARCHITECTURE.

77. Registered Architects.—Any person residing in or having a place of business in the State who, before this article takes effect, shall not have been engaged in the practice of architecture in New York State, under the title of architect, shall, before being styled or known as an architect, secure a certificate of his qualification to practise under the title of architect, as provided by this article. Any person who shall have been engaged in the practice of architecture, under the title of architect, before this article takes effect, may secure such certificate in the manner provided by this article. Any person having a certificate pursuant to this article may be styled or known as a registered architect. No other person shall assume such title or use the

* Bonet's name will be found signed to a number of the drawings illustrating De Caumont's "Abécédaire d'Archéologie," and his drawings illustrate the papers on Caen by J. H. Parker published in the Transactions of the Institute.

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abbreviation R.A., or any other words, letters, or figures to indicate that the person using the same is a registered architect.

78. Board of Examiners.—The regents of the university shall, within ninety days after this article takes effect, appoint a board of five examiners, who shall make rules for the examination and registration of candidates for such certificates, subject to the approval of the board of regents. Such board of examiners shall be composed of architects who have been in active practice in the State of New York for not less than ten years previous to their appointment, selected by the regents. Such examiners shall be entitled to such compensation for their services under this article as the board of regents shall determine, not exceeding in the aggregate the amount of fees collected from applicants for certificates.

79. Qualifications; Examination; Fees.—Any citizen of the United States, or any person who has duly declared his intention of becoming such citizen, being at least twenty-one years of age and of good moral character, may apply for examination or certificate of registration under this article, but before securing such certificate shall submit satisfactory evidence of having satisfactorily completed the course in an approved high school or the equivalent thereof and subsequent thereto of having satisfactorily completed such courses in mathematics, history, and one modern language as are included in the first two years in an approved institution conferring the degree of bachelor of arts. Such candidate shall in addition submit satisfactory evidence of at least five years' practical experience in the office or offices of a reputable architect or architects, commencing after the completion of the high-school course. The board of examiners may accept satisfactory diplomas or certificates from approved institutions covering the course required for examination. Upon complying with the above requirements, the applicant shall satisfactorily pass an examination in such technical and professional courses as are established by the board of examiners. The board of examiners, in lieu of all examinations, may accept satisfactory evidence of any one of the qualifications set forth under subdivisions one and two of this section.

1. A diploma of graduation or satisfactory certificate from a recognised architectural college or school, together with at least three years' practical experience in the office or offices of a reputable architect or architects; but the three years' experience shall be counted only as beginning at the completion of the course leading to the diploma or certificate;

2. Registration or certification as an architect in another State or country, where the standard of qualifications for the same are not lower than those required by the board of examiners under this article;

3. The board of examiners, in lieu of all examinations, shall accept satisfactory evidence as to the applicant's character, competency, and qualifications, and that he has been continuously and exclusively engaged in the practice of architecture for more than two years next prior to the date when this article shall take effect; or satisfactory evidence that the applicant has been actually and exclusively engaged in the practice of architecture on his own account or as a member of a reputable firm or association for more than one year prior to the date when this article shall take effect; providing the application for such certification shall be made within one year of such date.

Every person applying for examination or certificate of registration under this article shall pay a fee of twenty-five dollars to the board of regents.

79A. Certificates.—The result of every examination or other evidence of qualification, as provided by this article, shall be reported to the board of regents by the board of examiners, and a record of the same shall be kept by the board of regents, and such board shall issue a certificate of registration to every person certified by the board of examiners as having passed such examination or as being otherwise qualified to be entitled to receive the same. Every person securing such certificates shall file the same with the county clerk of the county in which he resides or maintains a place of business. The board of regents may revoke any certificate, if such action be recommended by the board of examiners, after thirty days' written notice to the holder thereof and after a hearing before the board of examiners, upon proof that such certificate has been obtained by fraud or misrepresentation, or upon proof that the holder of such certificate has been guilty of felony in connection with the practice of architecture.

79B. Violation of Article.—Any violation of this article shall be a misdemeanour, punishable for the first offence by a fine of not less than fifty and not more than one hundred dollars, and for a subsequent offence by a fine of not less than two hundred nor more than five hundred dollars, or imprisonment for not more than one year, or both.

2. This Act shall take effect immediately.

TOWN PLANNING IN RURAL DISTRICTS.*

By Mr. W. B. PINDAR, Clerk to the Hunslet Rural District Council.

HOUSING and town planning are so closely associated that they are dealt with as kindred subjects in the same Act of Parliament, but although a large number of Rural District Councils have prepared and adopted schemes for the provision of dwelling houses, very few have hitherto availed themselves of their powers with respect to town planning. According to the report of the Local Government Board, only eight Rural District Councils had made application for authority to prepare town-planning schemes on December 31, 1914, and six of these had on that date been authorised to prepare schemes.

The obstacles to the preparation of satisfactory town-planning schemes are fewer in rural districts than in urban district and boroughs. There are not so many existing buildings to interfere with the general design, and the surveyor has, therefore, a comparatively free hand. Where road widenings and improvements are necessary or desirable they can be carried out at the minimum cost when the land is not already appropriated to buildings, and this is an important factor in all town-planning schemes. The number of owners, and particularly of small owners, to be dealt with is generally not so great, and there is consequently less difficulty in harmonising conflicting interests. Rural Councils have an opportunity of taking time by the forelock which urban districts, owing to their greater development, have lost, and a greater activity on their part in the administration of Part II. of the Housing, Town Planning, &c., Act while the conditions remain favourable would be amply repaid in the years to come. There is, moreover, a definite duty laid upon Rural District Councils, equally with Councils of more populous areas, to take the matter into their careful consideration. and Section 61 of the Act empowers the Local Government Board to make an order on the local authority requiring them to prepare and submit a scheme for approval if the Board are satisfied that such a scheme ought to be made.

The general object of a town-planning scheme is defined in the Act to be the securing of proper sanitary conditions, amenity and convenience in connection with the laying out and use of the land and of neighbouring lands. It is essentially a measure for promoting and safeguarding the public health, and its administration has been placed in the hands of the sanitary authorities. A scheme may be made as respects any land which is in course of development or appears likely to be used for building purposes, and wherever there is a scarcity of houses or a demand for the provision of new houses, either by the local authority or by private enterprise, we have a *primâ-facie* case for the preparation of a town-planning scheme. Apart from such a scheme there is absolutely no power in the hands of the District Council to control the lines on which the area may be developed, to prevent a pleasant residential district being spoiled by the erection of workshops or factories adjacent thereto, to avoid the destruction of natural objects of beauty which lend an attraction to the place, or to secure that the streets and roads shall be laid out in such a way as to meet the general convenience of the community instead of the immediate interests of the individual owner. It ought to be impossible to find a house in the country without a decent garden, yet we often meet with villages where the houses are clustered in a row fronting directly on to the road and with no accommodation at the rear beyond a small back yard. What is wanted is that every resident should have a home in the place, and not merely a house in which to eat and sleep. To secure this the houses should be placed as far as possible in pleasant surroundings with plenty of open space.

* A Paper presented at the annual conference of Rural District Councils of England and Wales at the Guildhall, London, on June 9.

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The preparation of town-planning schemes is a work which may appropriately be carried on at the present time, when so many other works are held in abeyance. The cost of the actual preparation of the scheme is not very great, and the fact that the building trade is almost at a standstill owing to the war renders it all the more desirable that schemes should be taken in hand now, so that when we return to normal conditions and there is a general renewal of activity it may be directed on right lines. It must be remembered that a satisfactory scheme cannot be carried through in a hurry, and that a considerable period, amounting probably to at least two years, must elapse between its initial and its concluding stages.

When it has been resolved to prepare a scheme the first important question to be decided is the area to which the scheme shall apply. This is a question which each Council will have to determine for itself, as circumstances vary largely in different localities, but, speaking generally, it is advisable not to make the area too small, since there is little difference between the cost of preparing a scheme for a small area and a large one. Frequently it will be advisable to include land in the area of an adjoining authority, particularly where a road forms the boundary between the two districts. A road is considered a bad boundary for a town-planning scheme, and whenever there is a road on the boundary of the area selected to be dealt with, a good building depth on the opposite side, say not less than 150 feet, should be included. One reason is that it is important to have the whole road under control for widening and general development purposes, and another is that the amenity of the area controlled by a scheme on one side of the road may be entirely spoilt by the crowding together of buildings on the other side which is free from any restrictions.

When the area has been determined, one of the first considerations, and probably the most important of all in rural town-planning schemes, will be to settle the lines of the principal roads to be constructed as part of the scheme and their width. From an owner's point of view it must be a great advantage to have it settled beforehand what roads are intended to be made, and from a ratepayer's point of view it is obviously better to have the roads made of an adequate width in the first instance rather than to incur the very heavy expense of widening them later. Owing to the advent of the motor-car and the enormous development of both fast and heavy traffic on our highways, the future standard of road construction, so far as through roads are concerned, with regard to both strength and width, will have to be considerably enlarged. Many road widenings have already been undertaken in rural districts, and considerable sums of money have still to be expended in rounding off ugly corners in order to increase the safety of the traffic. The importance of this question will be realised when we remember that five-sixths of all the main roads of the country, and more than 90,000 miles of other roads, are situated in rural districts.

As an indication of what the future demands on our principal roads are likely to be, let me quote here the figures published in the *Car*, showing the growth of the motor-car industry. According to this journal, the number of motor-cars running in this country was as follows:—

Year.	Motor Cars.	Motor Cycles.	Heavy Motors.	Total.
1906 ...	49,300	48,700	3,200	101,200
1912 ...	175,247	132,245	12,627	320,119

These figures show a very rapid increase of traffic, which is most marked in that of heavy motor vehicles, and there is little doubt that it will continue to expand for some time to come. It is also very probable that one result of the war will be a great impetus to the agricultural industry, and if this is so more residents will be attracted to the rural districts, and the necessity of adequate roads for the conveyance of passengers and produce will be greater than before.

The provision of a sufficient number of open spaces to be used as recreation grounds will form an essential part of the scheme. Just as the town needs its park, the village requires its playground. The playgrounds must be arranged so as to be convenient to the houses, and not too far away, or the children will not use them, but will continue to play about the streets, to the danger both of themselves and users of the roads. Other open spaces will be required for cultivation as allotments, no buildings being allowed to be erected on them other than greenhouses, summerhouses, &c.

The need for the limitation of the number of houses to the acre appears to be quite as great in rural districts as in the towns. There are many rural areas where the houses in the centre of the village are crowded together at the rate of forty or more to the acre, as though the land were more valuable than in the heart of London. Special areas may also be reserved for certain classes of buildings, and provision made to prevent the spoiling of good residential districts by the erection therein of shops, warehouses, or factories. The limitation of the number of houses to the acre is always one of the most important features of any scheme. Here again circumstances vary so much in different localities that it is impossible to set up any fixed standard. The number of houses permitted in a residential area, for instance, would not be so large as in an industrial district. Each Council must be the judge of what is most suitable for its own area, but it is now generally agreed that the maximum number of houses of any class allowed on any one acre should not exceed twenty.

Generally it will be possible in rural districts to design schemes which will not involve the local authority in serious claims for damages, and on the other hand, where any property is increased in value by the making of the scheme, the Council may recover one-half of such increase from the owner. In my opinion the most prudent course a Council could adopt would be to consult an experienced surveyor at the outset, as by so doing they will avoid many difficulties which would otherwise beset them. The modifications of the regulations prescribed by the Local Government Board to be observed in the making of schemes have greatly simplified the procedure and reduced the labour involved, and in conclusion I feel that I cannot do better than quote the words of the Board's circular on the Act issued on December 31, 1909, in which they say that "the Board trust that Councils in whose districts signs of development are visible will give very full consideration to the opportunities which the Act offers of guiding and controlling that development for the benefit of the community, and that in so doing they will bear in mind the heavy burden which has fallen on the ratepayers of many districts in the past in remedying defects of the kind which it is now within their power to prevent."

ART IN LONDON.

GUILDHALL ART GALLERY.

THE Corporation of the venerable City of London has done much in the past to earn the gratitude of the public for the fine loan collections of paintings exhibited annually since the year 1890. But aside from any inherent interest that may have existed on previous occasions, the special circumstances attaching to this year's collection would make it something altogether apart from others. To-day we devote our waking thoughts and acts to the terrible ordeal of the war, and therefore it is that an exhibition devoted to war memorials peculiarly appeals to the public.

And such an exhibition! Though in the course of perambulation we encounter works indifferent, poor and (in a few cases) worse than poor, yet a striking feature is the large amount of better than good—of excellent—work which is presented to the gaze. The first one we wish to notice is a portrait of the Iron Duke painted by Francesco Goya shortly after the Waterloo campaign; interesting as a picture, it fails to convey to us the idea of Wellington's presentment at the age of forty-seven; but with the conception of modelling, pose, and technique, criticism must be fully in accord. Mr. Napier Hemy's "Betrayed by the Moon" is full of verve and not untouched by rhythmic qualities, but it does not convey the typical Hemy touch which we so much approve.

Special interest attaches to the portrait of H.M. King Albert. Application was made to the Huns, asking that the portrait of the King of the Belgians, hung in Brussels, might be sent for exhibition at the present show. This request was denied, but, by King Albert's kind permission, Mr. Harold Speed was given the opportunity to paint this portrait in the month just closed, and he has produced a brilliant sketch, full of esprit, and apparently he was quite undismayed by the continuous sound of the guns only six miles distant from his improvised studio. Herkomer's two portraits are of unequal value—perhaps not from the standpoint of portraiture, but as pictures. We are not in sympathy with the presentment of Lord Fisher to the same extent as with that of Lord Kitchener; both works are clever, but the flesh tones of Lord Fisher's hands are dirty,

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and there is not the forcefulness and perfection such as the canvas showing the Secretary for War presents.

Mr. John Lavery's one work is the portrait of an engaging personality, "Mr. Winston Churchill," but it is not an engaging portrait, nor is it in any degree pictorial; the texture of the flesh is poor, and the intimate relation between the figure and the background is to be deplored. Mr. Churchill's colleagues, the Prime Minister and the Marquess of Lansdowne, are here portrayed by Mr. Fiddes Watt; Mr. Asquith in a work which does full credit to the artist; and the noble lord much less favouarbly limned. Both are well modelled, but otherwise they cannot compare in artistic value.

With a few notable exceptions, we must confess that the artistic work of our gallant French Allies does not appeal to us, and assuredly this is true of M. Guillonet's "Invasion of the Huns"; these, *bien entendu*, are the old original Huns of fifteen centuries ago. We must not grudge to the canvas our acknowledgment of the power of portrayal and certain other artistic qualities, but the treatment is decidedly—and naturally—Gallic. But one of the gems of the exhibition is by a Frenchman—M. Henri Jacquier—and this is a portrait of General Joffre. There can be nothing but praise for its colour, modelling, unforced forcefulness, and artistic modulation. As much cannot be said for Mr. Charlton's portrait of the Grand Duke Nicholas: it is curious to see this canvas occupying part of the wall customarily devoted to Copley's gigantic battle scene depicting General Heathcote and the batteries of Gibraltar, for an outstanding fault in both instances is the Brobdingnagianising of the principal figure to such an extent as to render all others ridiculous, proper scale and distance not being observed. But we are glad to be able to speak in the highest terms of one of Mr. Charlton's exhibits—"The Charge of the 12th Lancers at St. Quentin, 1914"—a work full of local colour, of atmosphere, with the groups well composed and indicative, too, of his unsurpassable power of depicting horses (indeed, we can fully praise in this respect the Grand Duke's charger). What a pleasant contrast is this second work of Mr. Charlton's to Mr. Allan Stewart's dealing with the same incident; the one work is the negation of the other.

Of Mr. W. L. Wyllie's four canvases "The Battle of the Nile" is the one that stands out most prominently; it is an epic and needs no laborious words in praise, for its qualities speak for themselves. And Mr. W. B. Wollen, too, merits full commendation for his fine works (Nos. 40 and 239), portraying incidents in the present and Waterloo campaigns respectively. M. Detaille seems to hold for France something of the position which Lady Butler holds here, as regards the class of work; but he does not compare in merit. No. 143 in genre-work, and No. 120 in portrait-modelling, are the best, as we think, of this artist's thirteen exhibits. Of Lady Butler's two works, "Steady the Drums and Fifes" is recognisably hers, but "Balaclava" we should not have so identified. A pathetically sad work is M. Gérôme's "Execution of Marshal Ney," treated with artistic simplicity; M. Henri Chartier's two works deserve notice, "The Rally" exhibiting some of the qualities of Mr. Charlton's art, and "The Whirlwind" being very spirited and, as we will hope, of good augury for the fortunes of the Allies in this year of grace. We cannot afford to pass without notice Meissonier's "Le Guide," an excellent work and well worthy to represent his genius. M. Malespina's "Waterloo" should not be exhibited in such a fine exhibition—it is a blot unmitigated. "The Square Battalion at Waterloo," by M. Protais, is rhythmically treated. M. de Neuville is largely but not pleasantly represented: his work in general lacks modulation where it is not crude and slap-dash. There is the Canaletto touch about M. Charlet's "Grenadier of the Guard."

We must notice just three more works—Mr. Caton Woodville's "Battle of Maiwand," full of the battle spirit and atmosphere; Sir Harry Johnston's "After the Battle," which is admirable so far as the body of the Zulu warrior is concerned, and finally Mr. Matthew Hale's "The Drums of the Fore and Aft." The story has been told by Mr. Kipling with a dramatic pen, and is here depicted by Mr. Hale with an equally dramatic brush; the pathos is more prominent here than in the written story, however, for here we get only the lights, while Mr. Kipling was compelled to present the shades also; a glorious death covered up the errors of the lads' ignoble years; and this is peculiarly brought home to the present writer by the death of a young man in the present campaign who exchanged a disappointing career at home for a hero's fate in the fields of France.

WATER-COLOURS BY LAURA KNIGHT AND LAMORNA BIRCH.

UPON a recent visit to the galleries of the Fine Art Society, 148 New Bond Street, we experienced a new sensation—one of pleased surprise. For hitherto inspection of Mr. Lamorna Birch's productions has not caused in our being one single thrill, or to our heart one extra pulse-beat. But that is now quite forgotten, or only so far remembered as to enhance the pleasure on this occasion, when Mr. Birch's art reveals a quality which renders the task of the critic a grateful one.

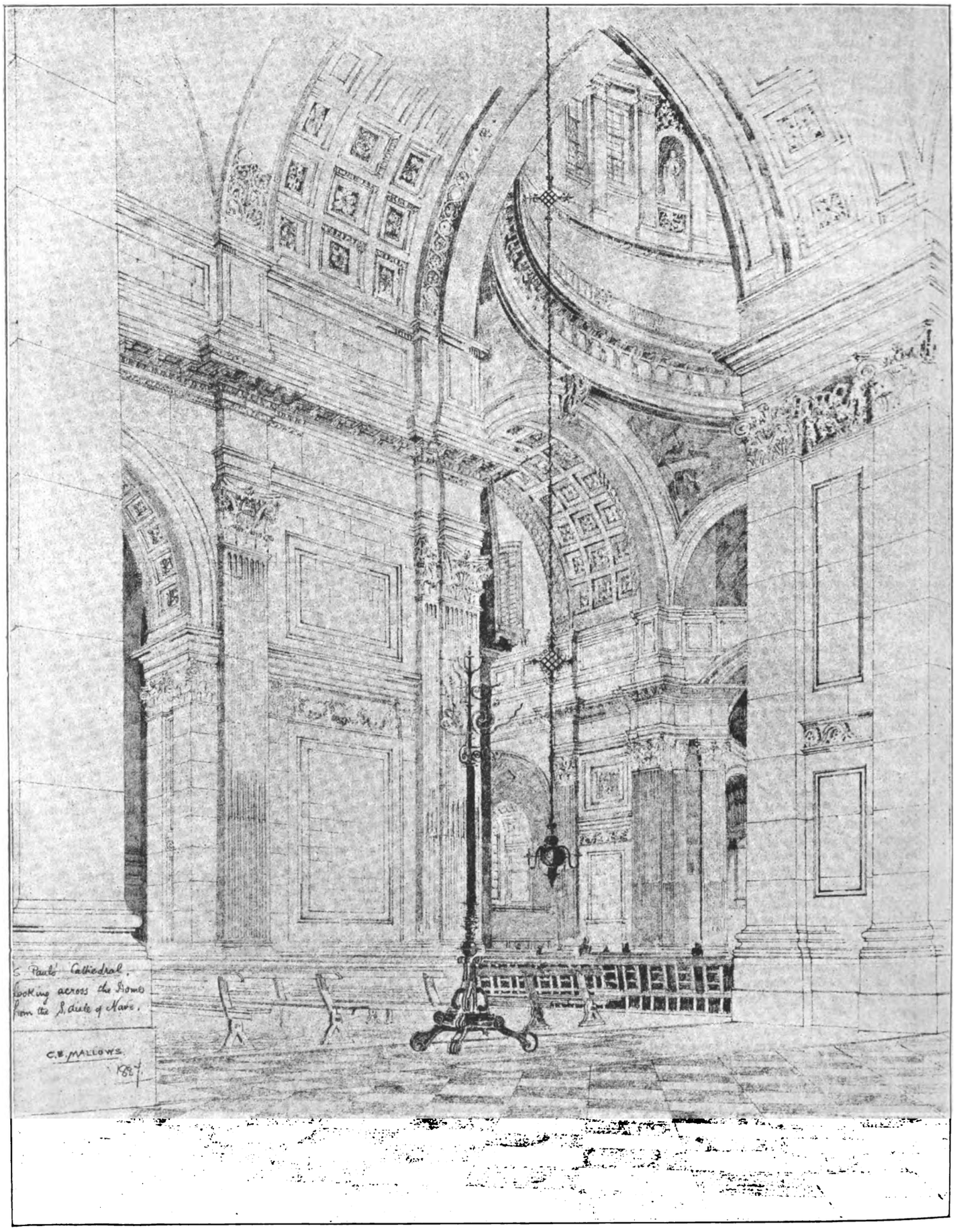
Politeness, however, demands that attention should, in the first place, be directed to the productions of the lady, and whatever else politeness might suggest in the way of sugared criticism, truth more insistently demands frankness of word in expressing the tenour of our judgment.

Hitherto it does not seem to have occurred to us to record our impressions of Miss Knight's art; for good or otherwise, it did not seem to call for specific notice. But in an exhibition where her works form an integral, in place of a merely fractional, portion silence must be broken. We do not by any means deny a certain style and quality, but the quality is unaccompanied by quantity. Miss Knight can portray calves with considerable realism, and in Nos. 77, 82, and 85 she shows to advantage; also her studies of a man (81) and a woman (94) are virile, though why people must choose the top of a precipice for the *dolce far niente in puris naturalibus* Miss Knight and other artists alone know. We regard No. 81, however, as one of the striking pictures on show. Her series of ballet and costume sketches do not please us at all, with perhaps the one exception of "Le Carnaval" (73). In "Bathing Pools" the water is very successfully depicted. But we will now regard Mr. Birch's work, and here our pleasure is keen. Whether it be "The Crook o' Lune, Lancaster" (7), "A Beach near Portsmouth," "An Old Mill Stack, near Falmouth," "The Fringe of the Wood," "Murren, from the Wengen Alps," "A Cornish Landscape near Falmouth," or "Hornby," our recognition of entirely good work is equally pronounced. At times the artist's technique is thin, and at times he displays the harshness and even crudity which have hitherto been such marked characteristics. Outstanding qualities of Mr. Birch's present productions are the good colour, the breadth, and the feeling for atmosphere. "A Rough Sea" (19) is excellent in its grays and greens; "The Passing Storm" is one of those productions which bear close inspection and look equally well at a distance; this and "A Cornish Stream" (63) are two of the best works exhibited. We have selected the foremost of Mr. Birch's works for mention, but we fully recognise the good qualities of many more, which we must here pass over unspecified.

THE Croydon Municipal Council, in order to improve the water supply of the borough, has resolved to promote a Bill in Parliament for the construction of two new wells and necessary works on sites a few miles to the west of Croydon, also to supply the chlorine process of purification to the whole supply of the borough. The scheme, which will not be completed in less than five years, involves an outlay of about £250,000.

A FURTHER list of wages concessions has been issued by the Executive Council of the Amalgamated Society of Carpenters and Joiners as follows:—Southampton: War bonus of 4*s.* per week under the award given by the Government Committee on Production. Queenstown: Wages advance of 4*s.* 6*d.* per week. Edinburgh and Leith District: Increase of 1*d.* per hour, in addition to an increase of ½*d.* per hour which automatically came into operation on June 1. Loughborough: War bonus of ½*d.* per hour. Liverpool: Wages advance of 4*s.* per week in the case of time workers and 10 per cent. on piece rates. Glasgow district: Wages advance from July 1 of ½*d.* per hour. Country allowance to be increased from 7*s.* 6*d.* to 8*s.* 6*d.* per week. Car fares to be paid for over one mile instead of as formerly two miles. Paisley and Renfrew: Wages advance of ½*d.* per hour. Alloa: Wages advance of ½*d.* per hour from July 1?. Dunoon: Wages advance of ½*d.* per hour from May 3. Trowbridge and Frome: Wages advance of 1*d.* and ½*d.* respectively. Lynn: Wages advance of ½*d.* per hour from June 1.

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The late Mr. C. E. Mallows was not only an architect of ability, whose work is to be seen in many buildings actually erected, but was one of the most skilful architectural draughtsmen of his time, and we reproduce to-day examples of some of his drawings which appeared in *The Architect* many years ago.

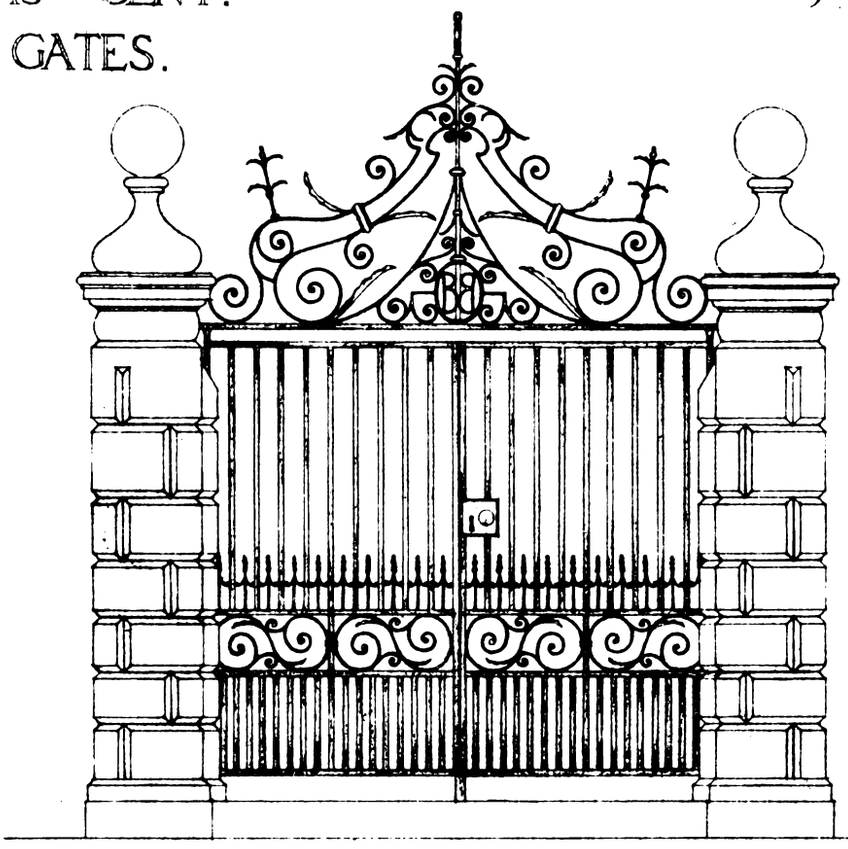
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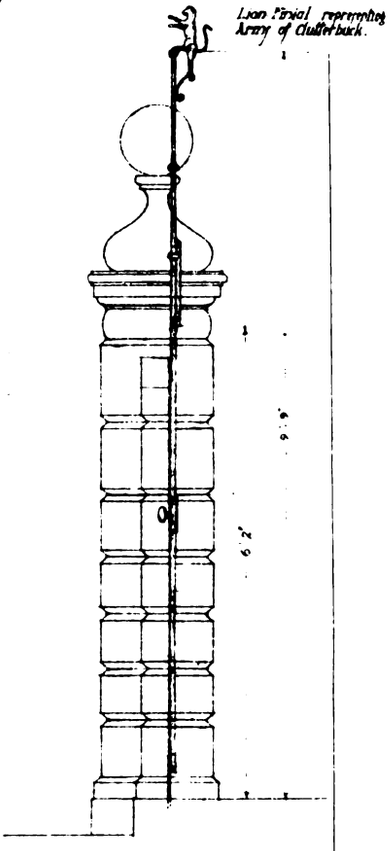
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18TH CENT. GATES.

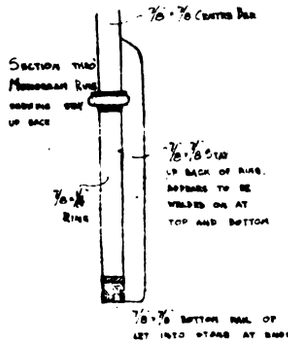
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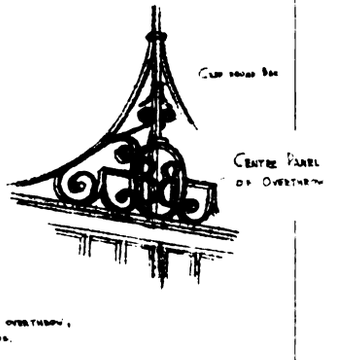


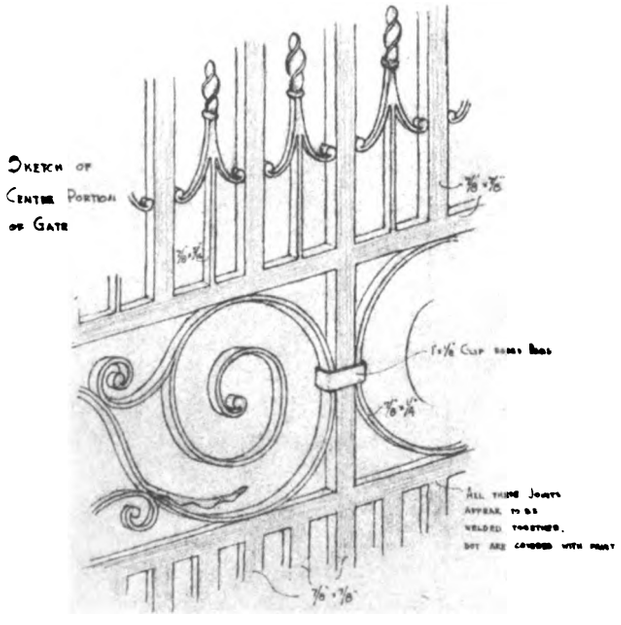


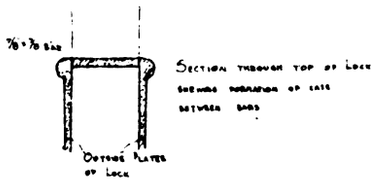
scale of feet for Elevation and section

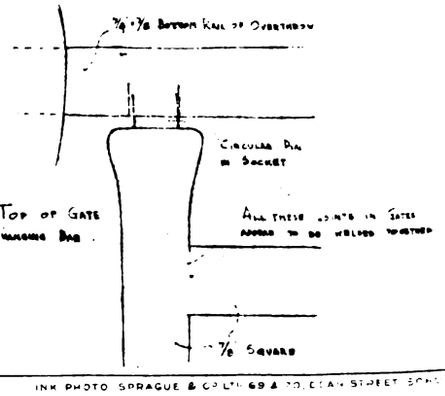
These gates are preserved in good condition by thick coatings of paint: which, however, obscures the fineness of the workmanship The metal of the scrolls is ⅞"×⅛" while the leaves are beaten out of thin metal sheets, and are very finely formed.









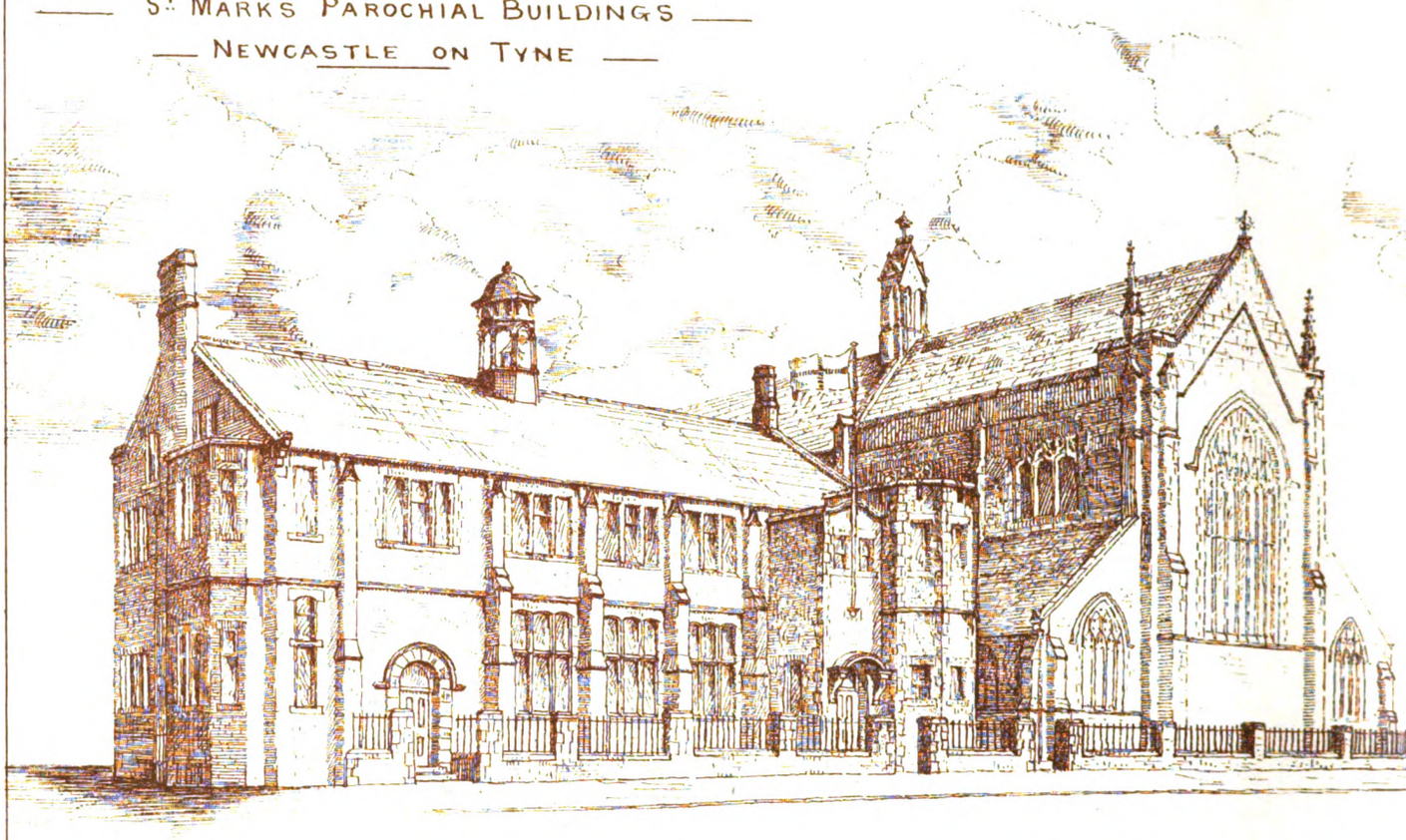


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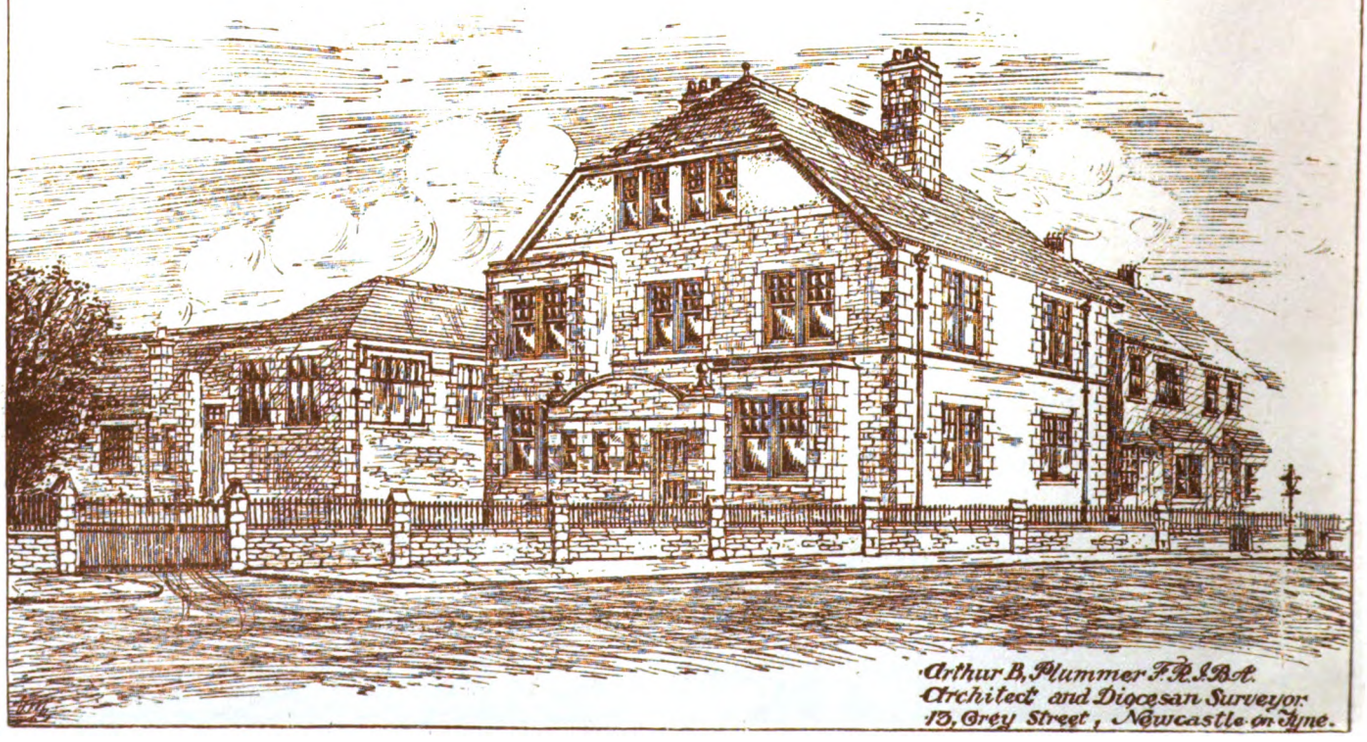
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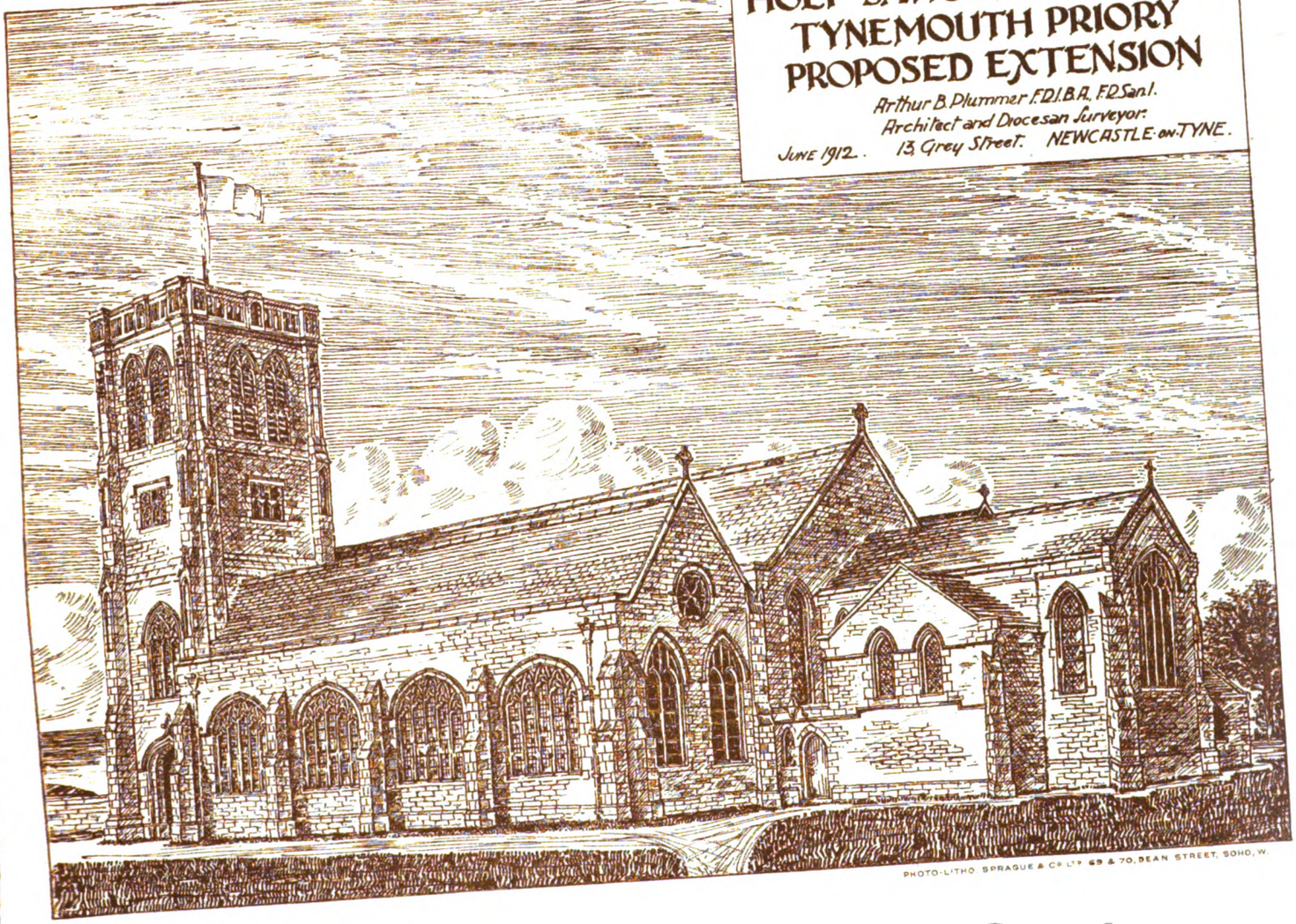


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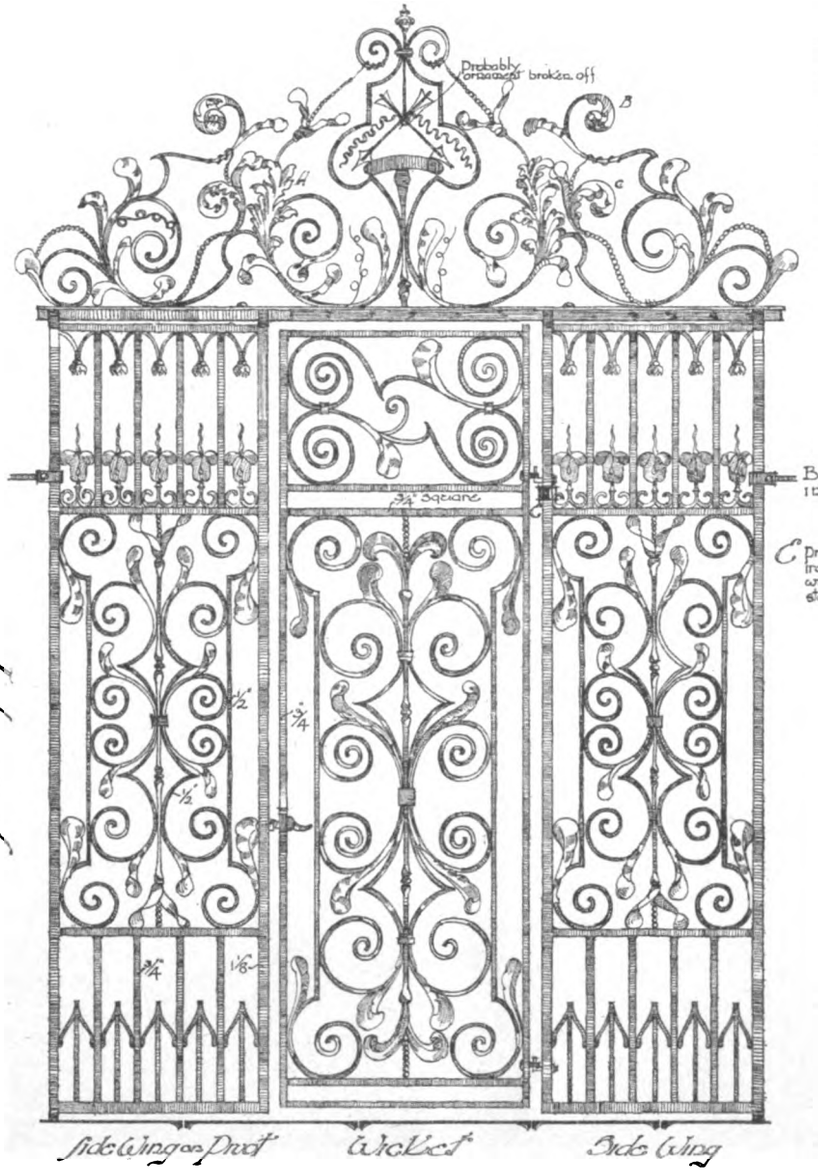
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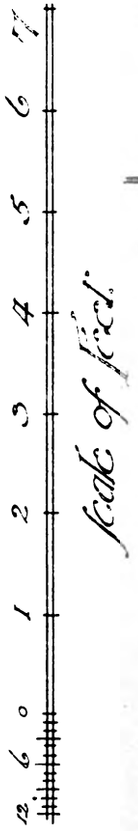
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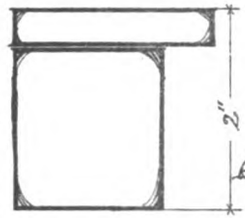
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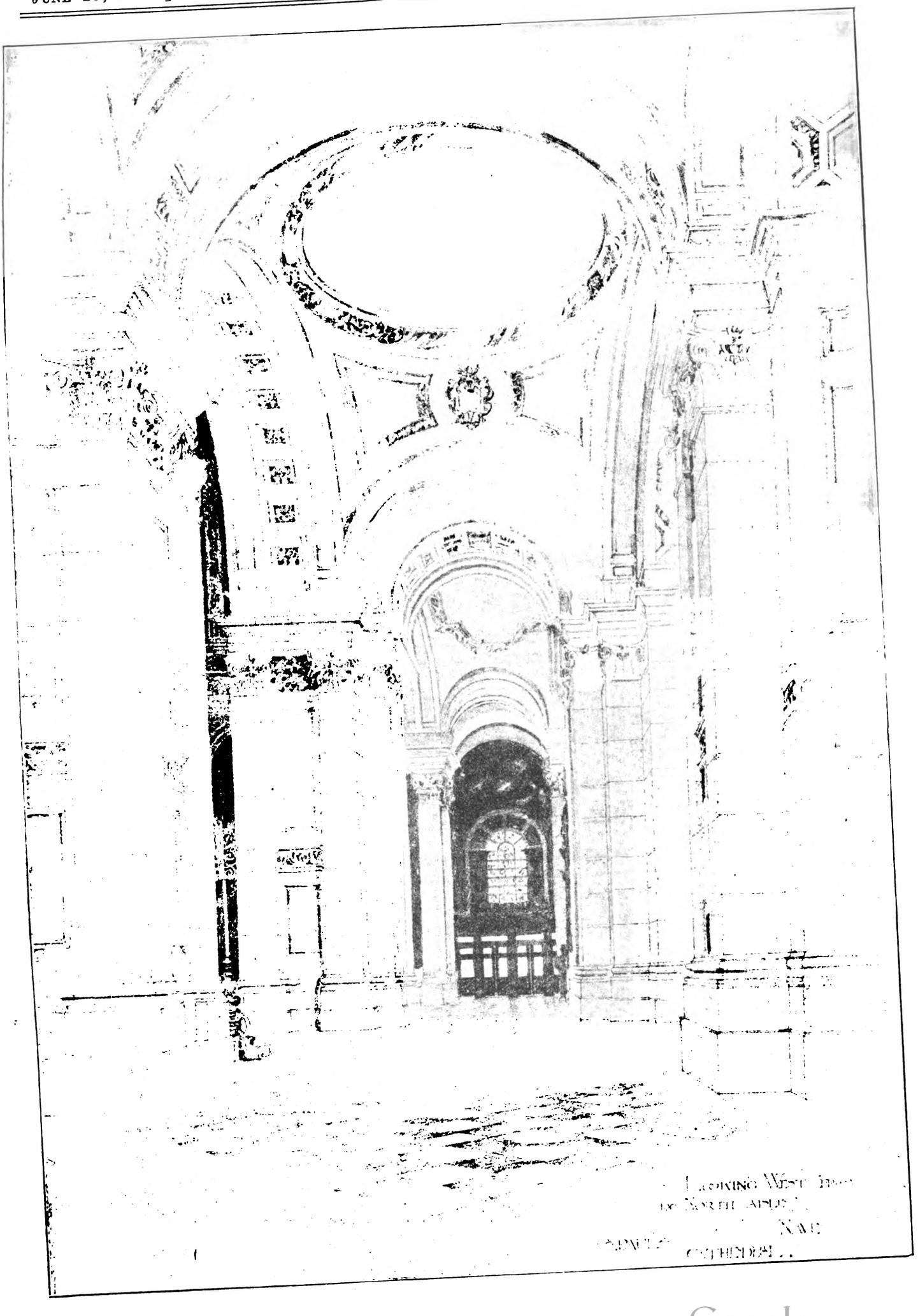
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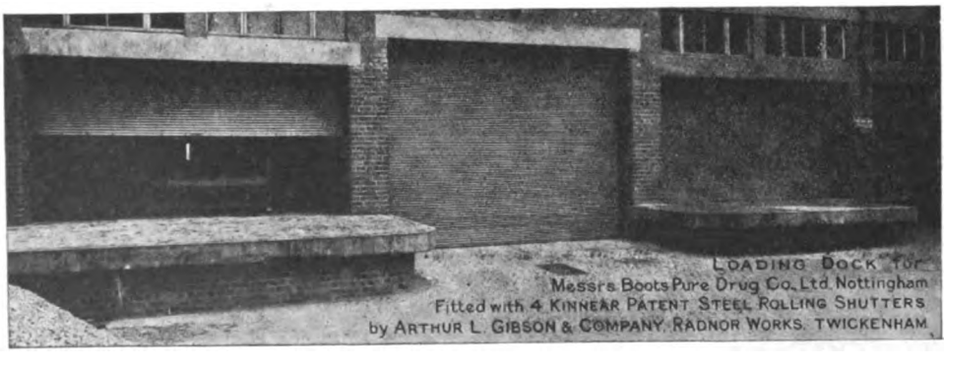
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CLAIM ON ARCHITECTS' CERTIFICATE.

IN the King's Bench Division on Wednesday, June 9, before Mr. Justice Rowlatt, an action was brought by Messrs. George Sands & Son, Ltd., of Colwick, near Nottingham, against the Manchesrer Palace of Varieties, Ltd., for the recovery of £606, being the amount alleged to be due under the architects' certificate by the defendants to the plaintiffs for work done and materials supplied under a contract dated February 27, 1913. Messrs. Sands & Son, Ltd., were the contractors for the steel-work construction in connection with the erection of the Palace of Varieties at Manchester. According to the particulars of the plaintiffs' claim, the total amount due under the contract was £6,600, and the amount due for extras, surveyor's charges, rent, and bonus under one of the clauses of the contract was £584. Cash received on account by the plaintiffs amounted to £6,450, leaving a balance alleged to be due to the plaintiffs of £734 9*s.* 6*d.* The amount sued for, £606, was the amount of the certificate of Mr. Bertie Crewe, the defendants' architect. The defendants put into Court a sum of £340, and said that that was sufficient to satisfy the plaintiffs' claim. They did not admit that the amounts alleged to be due were certified by the defendants' architect.

Mr. Parfitt, K.C., and Mr. H. J. Rowlands (instructed by Mr. W. H. Redgate, Nottingham, and Messrs. C. & Oxenburgh & Son) appeared for the plaintiffs, and the defendants were represented by Mr. Cyril Atkinson, K.C., and Mr. T. Scanlan, M.P. (instructed by Messrs. Joynson Hicks & Co.).

Mr. Parfitt said the plaintiffs' claim was first of all for £606, which the plaintiffs said was the amount of the final certificate given by the defendants' architect. Alternately, if it was not the final certificate of the defendants' architect, the plaintiffs claimed £734, which they said was the balance due to them. In February 1913 the defendants, who owned this Palace of Varieties, determined to reconstruct the theatre, and the contract for the steel work was placed with Messrs. Sands. The contract price was £6,600. Messrs. Sands proceeded to do their work, but the defendants took up the position after this final certificate was signed that the plaintiffs were not entitled to any bonus for anticipating the date when the work had to be completed under the contract.

The hearing was resumed on Friday, June 11, when Mr. Atkinson opened the case for the defence. He said it was difficult to appreciate how the claim for bonus was made. If it was not based on the certificate it could only be based on the contract, and the contract was perfectly clear as to what the bonus was for. If the building was not ready for the steel work, the date of completion was to be advanced. Failing the certificate, he must show that he lost a certain number of days, entitling him to the bonus. There had been no evidence given to enable the Court to say what number of days were lost. The plaintiffs were entitled to say that the date of completion should be advanced according to the number of days lost.

Mr. Bertie Crewe, architect, giving evidence, said the seatings and cuttings-out were not being got ready as fast as they wanted, and witness made an arrangement with Mr. Sands for an extension. He understood that Mr. Sands had been seriously delayed in the work. They were doing all they could, and doing the work in an excellent manner, but the job was hopelessly late. Witness finally agreed that Mr. Sands should have an extension for elevating the auditorium steel work from June 24, 1913, the contract date, to August 20, so that they would have an extension of about two months.

In cross-examination witness said that no doubt Mr. Sands was anxious to earn his bonus of £50 per week for the time he anticipated the completion of the contract. All through the early part of July he complained of the *débris*, and he was perfectly justified in doing so. Whatever the result of this case might be, there was no fault to find with Messrs. Sands.

Mr. J. C. Durham, architect, assistant with Mr. Crewe, who had charge of the job, described the causes of the delay which prevented Messrs. Sands from getting to work with their steel construction, and the differences in the weight of steel work as between the original drawing upon which Messrs. Sands based their estimate of £6,600, and the amended steel work necessitated by new plans as the work proceeded. Witness made a deduction of £50 in respect of steel work which was not put in.

His Lordship, in giving judgment, said the first question was a very short one—namely, whether the plaintiffs could recover more than was stated on the certificate signed by Mr. Crewe by reason of the fact that there was a deduction of £50 in respect of the omission of steel work which would have been required under the original scheme. He did not think the plaintiffs had made out their case in this respect. In regard to the question of bonus, plaintiffs' counsel said he had got a certificate or an award. He (the judge) thought he was wrong; and he held that it was not a certificate in the sense that it was final and conclusive. He held that there was an arrangement between Mr. Crewe and Mr. Sands in the sense of an allowance of time, and he gave judgment for the plaintiffs for £514 with costs.

BUILDING LINE IN THE EUSTON ROAD.

IN the House of Lords Earl Loreburn, Lord Parker, Lord Sumner, Lord Parmoor, and Lord Wenbury have given judgment in this long-disputed matter, holding that the view taken by Mr. Justice Ridley (which affirmed the opinion of the Tribunal of Appeal) was right, and allowed, with costs, the appeal by the London County Council against a decision of the Court of Appeal. The Euston Road was laid out in 1756 under an Act of that date which provided that no buildings should be erected on new foundations within 50 feet of the highway. This Act was repealed by the Metropolis Management Act, 1862, which stated that no buildings should be erected beyond the general line of buildings if the distance from the highway did not exceed 50 feet. Long before 1862 buildings had been erected on the forecourts of the then existing buildings and projected beyond the 50-foot line. As to a certain section representing 380 yards of the Euston Road, the Metropolitan Board of Works in 1876, at the recommendation of their then architect, Mr. Vulliamy, and with the view of establishing a new and regular line of buildings 11 feet from the roadway and up to the inner edge of the pavement, roughly coinciding with existing projections, passed a resolution enabling all persons interested to build up to that frontage without restriction as to height. This resolution had been extensively acted on. In 1909 Mr. Clode proposed to re-erect certain premises, bringing them up to the 11-foot line. The London County Council objected, and their superintending architect certified that the general line of buildings in the particular section was the old 50-foot line.

Mr. Clode, with other owners, raised the question of what was to be regarded as the building line before the Tribunal of Appeal, which special body ultimately gave its decision in favour of the L.C.C.'s contention, so that the certificate of their surveyor was affirmed. The next step was to apply for a case to be stated, and the special case came on before a Divisional Court. Justice Lush, as the junior Judge, was of opinion that the appeal should be allowed. Justice Ridley, the senior Judge, took a view which coincided with that of the Tribunal of Appeal. Accordingly the decision of the Tribunal of Appeal was upheld. Mr. Clode then went to the Court of Appeal, where he was successful, and the County Council took the question to the House of Lords.

Correspondence.

[The Editor will not be responsible for the opinions expressed by Correspondents.]

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We appeal to you with every confidence for your favourable consideration.—Yours, &c.,

THOS. SEAL, President.
JOHN W. HIRST, Secretary.
Institute of Plumbers, Ltd.
HARRY ATKINSON, President.
JOHN H. EDMISTON, Secretary.
United Operative Plumbers and Domestic Engineers' Association of Great Britain and Ireland.

Red Cross Voluntary Aid Detachment.

SIR,—The Architectural Association has undertaken to form a Red Cross Voluntary Aid Detachment, with headquarters at 18 Tufton Street, Westminster. At least fifty men are required, and it is hoped that all those connected with the architectural profession who are not eligible for the Army and not otherwise serving the country at the present time will send in their names to the Secretary of the Association, from whom all further particulars may be obtained. A subscription of 2*s.* 6*d.* is asked from each member joining, to defray the cost of training equipment.

The detachment will be made use of by the Red Cross Society immediately it is efficient. A short course of training is necessary to obtain the Red Cross Society's certificate, and this course of training will be commenced at once. It is therefore necessary that those who desire to join should send in their names without delay, and at the same time state if they have had any experience in first-aid work, and if they hold any certificates. It is not expected that members of the Detachment will give full time, but whatever time can be given to the work will be fully utilised.—Yours, &c., H. AUSTEN HALL, President.

The Architectural Association,
18 Tufton Street, Westminster, S.W.: June 16, 1915.

THE 800th anniversary of the church of St. Mary the Virgin, Merton, Surrey, is being celebrated this week. The church, formerly attached to Merton Abbey, was founded in 1115. Lord Nelson attended service there when he lived in the district. It contains a marble tablet in memory of Captain Cook, erected by his widow, and also a valuable painting attributed to Luca Giordano.

THE Surrey County Council at their last meeting adopted the report of the Public Health and Housing Committee which stated that Mr. T. W. Aldwinckle, F.R.I.B.A., had accepted the appointment of architect in respect of the proposed tuberculosis sanatorium and hospital at Sattenham, near Godalming, and had been instructed to proceed with the preparation of plans. The committee had decided that Belgian refugees in the county should receive free dispensary treatment, and should be regarded as non-insured persons in respect of institutional treatment. All discharged soldiers and sailors in the county suffering from tuberculosis are to be treated as insured persons.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 12,183. May 18, 1914.—A corrugated ridge cap in any metal or plate for the purpose of ridging a corrugated roof.—George Palmer, "Mona" House, Pembrey Road, Llanelly, Carmarthen.—This invention relates to ridge caps for corrugated roofs, of the type which are adapted to fit the roofing in such a manner that rain and wind cannot readily be blown in between the cap and the roofing, especially adapted for use in conjunction with corrugated roofing known as "Canadian flute." The invention consists in a ridge cap which is provided with a central longitudinal ridge and with transverse corrugations formed at intervals in the lateral portion of the cap and terminating short of the central ridge, the corrugations being constructed and arranged so as to correspond with the corrugations of the Canadian flute roofing. Fig. 1 is a plan of the ridge cap showing the same in its extended position before bending to pitch of roof. Fig. 2 is an end elevation

Fig. 1.

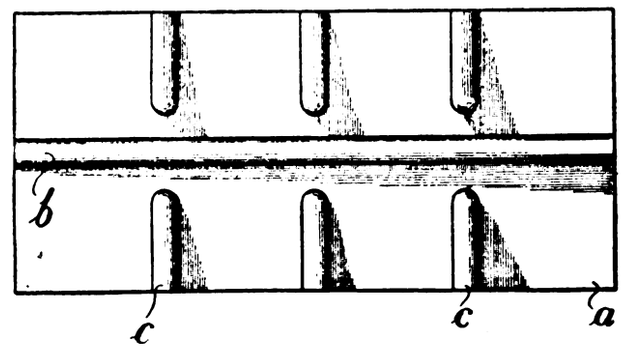
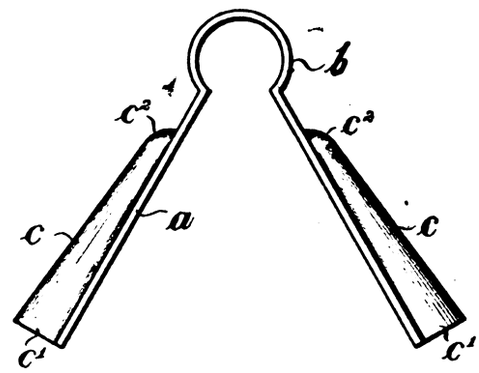


Fig. 2.

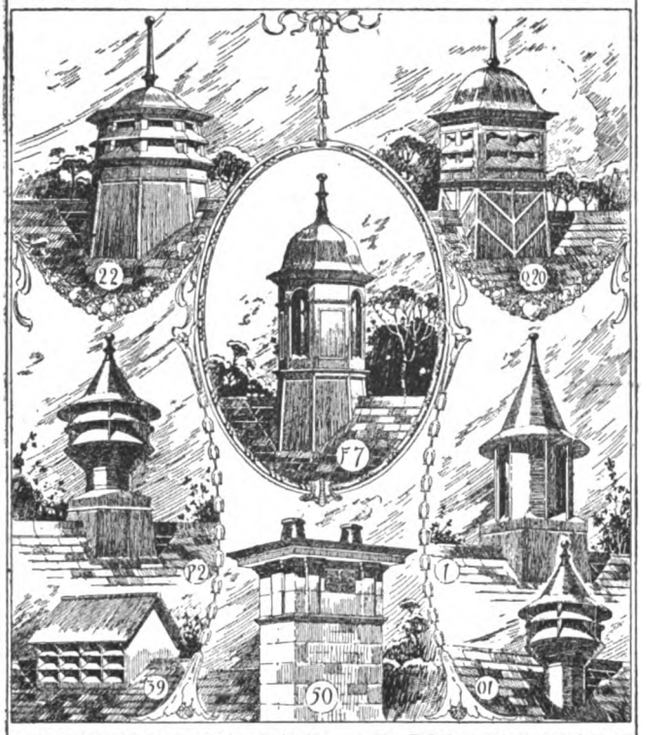


showing the ridge cap bent into shape for conformation with a roof of similar pitch. The ridge cap is constructed from a sheet or plate of suitable metal, such as by stamping. When constructing this plate a so as to bring it into conformity with the size and shape required, flutes or corrugations such as b and c are formed, the former running centrally and longitudinally of the sheet **a**, while those at c are arranged on either side of the flute b in a direction transverse of the sheet. The transverse flutes c have their commencement at a point separated from the longitudinal flute b. To ensure better conformation with coincident formations on the roof the transverse flutes c are tapered in such a manner that the outer ends c^1 are deeper than are the inner ends c^2. May 19, 1915.

THE death occurred at Worcester last week of Mr. Lewis Sheppard, formerly in practice as an architect, and who held the position of diocesan architect till about ten years ago when he retired. His services for church restoration were considerable. Mr. Sheppard, who died at the age of seventy, was a member of the Worcester Diocesan Architectural and Archæological Society.

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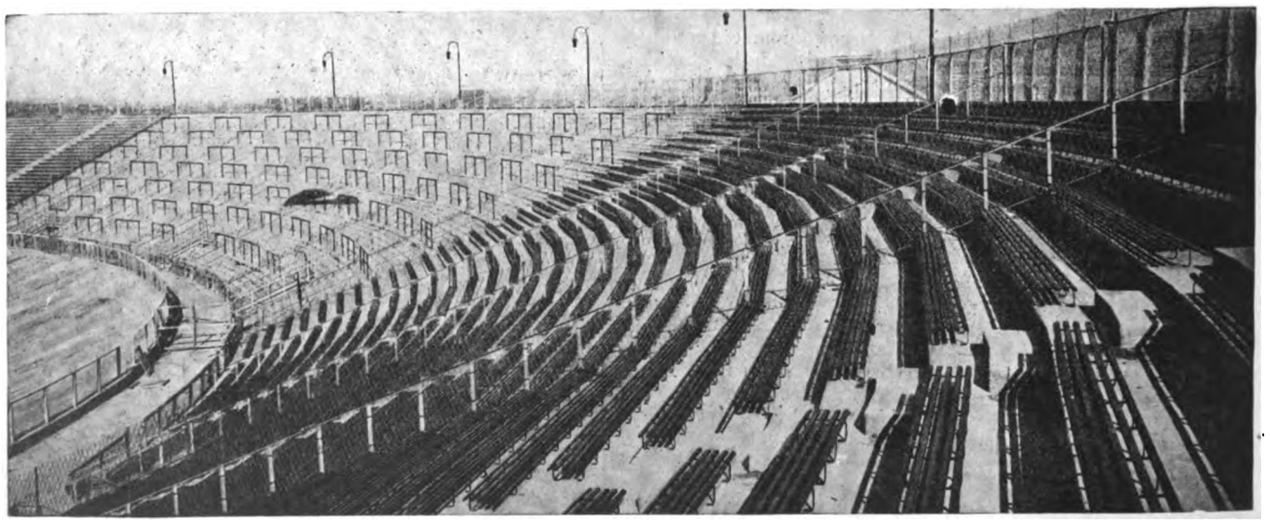
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A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Potton.—Domestic Science, &c., buildings, for the Trustees of the Potton Educational Foundation.

CHESHIRE.

Birkenhead.—Three hundred Council houses.

Ellesmere Port.—Council Offices, Station Road (£5,500).

DERBYSHIRE.

Heath.—Picture Palace, Holmwood. Mr. W. Jaffrey, architect, Bridge Chambers, Matlock.

DEVON.

Teignmouth.—Picture Theatre: additions and alterations. Mr. F. E. Lloyd Downes, architect, 36 Queen Street, Newton Abbot. Messrs. Blunt Brothers, contractors.

DURHAM.

Darlington.—Premises, Northgate. Messrs. Kellett & Clayton, architects, High Row Chambers.

Silksworth.—Three houses, Margate Street, for Messrs. J. & W. Hodgson.

ESSEX.

Tilbury.—Thirty-eight Council houses. Mr. S. A. Hills-Willis, Council surveyor.

GLOUCESTERSHIRE.

Patchway.—Baptist Chapel. Messrs. La Trobe & Weston, FF.R.I.B.A., architects, Unity Street, Bristol. Messrs. Walters & Son, contractors, St. Andrew's Road, Montpelier, Bristol (£643).

KENT.

Gravesend.—Hospital, Northfleet.

LANCASHIRE.

Blackburn.—Church of Christ, Herbert Street.
Dairy, Princess Street, for Mr. J. Bannan.
Premises, Didsbury Street: addition, for the Britannia Mill Company.
Shop and warehouse, Penny Street, for Mr. J. Walsh.

Bolton.—"Arrowsmith Arms," Mill Street: rebuilding, for Messrs. J. Sharman & Sons, Ltd.
Garage, off New Hall Lane, Heaton, for Mr. Batten.
Two houses, Green Lane, for Messrs. S. J. Hodgkiss, Ltd.

Bootle.—Municipal offices: alterations.

Oldham.—Council school, Upland Road, Chadderton.

Rochdale.—Drill Hall, Summer Street: extensions.

Wigan.—The Royal Albert Edward Infirmary: out-patients' department (£12,000).

LINCOLNSHIRE.

Lincoln.—Club premises, No. 247 Monks Road: additions, for the Committee of the Working Men's Club.
Acetylene welding shop, Canwick Road, for Messrs. Robey & Co., Ltd.

MIDDLESEX.

Ealing.—Isolation Hospital: additions. Mr. W. R. Hicks, Borough surveyor.

MONMOUTHSHIRE.

Bedwas.—Church, Thomastown.

NORTHAMPTONSHIRE.

Glapthorn.—Farm house. Mr. G. B. Chilvers (of Oundle), architect. Mr. W. M. Freeman (of Oundle), contractor (£600).

Rushden.—Council school for 175 places.

SOMERSET.

Frome.—Isolation hospital.

Taunton.—Nos. 43-45 East Reach: alterations, for Mr. Brice.
District Office, No. 21 Fore Street, for the Prudential Insurance Company.

STAFFORDSHIRE.

Cannock.—Enamel ware factory, Bushbury, for Messrs. Macfarlane & Robinson.

SURREY.

Orshott.—Pair of cottages, Blundel Lane, for Mr. A. Burgess.
"St. Aubyns," Oakshade Road: additions and alterations, for Miss Marlande.

SUSSEX.

Littlehampton.—Isolation hospital (£2,800).

Withyham.—Proposed Council school.

WARWICKSHIRE.

Coventry.—Mission Church, Camden Street (for 300 sittings).

WORCESTERSHIRE.

Bromsgrove.—Public Hall, New Road.

King's Heath.—Mission Hall and Sunday school, for All Saints' parish (£1,500).

YORKSHIRE.

Bradford.—Military hospital. City architect.

Dewsbury.—Working men's club, High Street, Hanging Heaton, for the Trustees.

Greetland.—St. Thomas's Sunday school (£1,700). Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax. Separate trade contractors.

Halifax.—Extension of premises, for the Equitable Benefit Building Society. Messrs. R. Horsfall & Son, architects, 22A Commercial Street.

Hull.—Two Home-making Centres (for about 900 places), for the Education Committee.

Ilkley.—P.M. school.

Maltby.—P.M. church.

Ripponden.—Power-house, for the Commercial Mills Company, Ltd.

Rossington.—Proposed church (£1,500).

Shiregreen.—Proposed church and vicarage, Windmill Lane.

York.—St. Anthony's Hall: additions, for the Committee of Management of the Blue Coat Boys' School.
Fever Hospital: proposed extension. City engineer.
Harker's Hotel: improvements (£950).
Four houses, Heworth, for Messrs. De Burgh Brothers.
Lunatic Asylum, Naburn: two employees' cottages, Lincroft Lane.

WALES.

Conway.—R.C. Church, Rosemary Lane.

Pontlottyn.—"Lord Nelson" Inn: alterations. Mr. T. Roderick, architect, Ashbrook House, Aberdare; also
"Railway" Inn: alterations.

SCOTLAND.

Dundee.—St. David's-in-the-West U.F. Church, junction of Blackness Road and Seymour Street (for 500 sittings). Messrs. Todd & Miller (of Edinburgh), architects.
Cottages, Pitkerro Road, for Mr. J. K. Anderson
King's Cross Hospital: Two new phthisis pavilions. (£14,000). Mr. J. Thomson, City engineer.
Shop, Brook Street: alteration, for Mr. A. Strachan.
Store, Dudhope Crescent Road, for the Town Council.
Tenement, North Tay Street: additions and alterations, for the trustees of the late D. Pirie and J. Whyte.
Warehouses, Arklay Street, for Messrs. W. Cleghorn, Ltd.
Works, Dundonald Street: extension, for Messrs. Sandeman & Sons, Ltd.

Falkirk.—Bonnybridge Public School: proposed alterations, for the School Board.

Kelso (near).—The Mansion House, Edenhall: conversion into a hospital for the wounded.

Wishaw.—Retort house, for the Council Gas Works.

IRELAND.

Ballinagh.—Parochial house. Mr. P. McAleenan (of Castlewellan), contractor (£1,200).

MR. DAVID JUDD, of Kingston Road, New Malden, Surrey, retired builder, died on January 21, leaving £48,273.

THE Director of Labour Statistics at the Board of Trade, in his report on the state of the labour market in May, states that the high level of employment in April was fully maintained, and a scarcity of male labour was reported by nearly all trades owing to the previously existing surplus in some having been absorbed by others or drawn off by enlistments. This shortage is now extending to female and boy labour in many occupations. Men in the building trades have enlisted in large numbers, with the result that although building operations have been much restricted there was very little unemployment among those remaining in these trades.

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THE
Architect and Contract Reporter.
FRIDAY, JUNE 18, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—July 27.—The Cleansing Committee of the Dublin Corporation invite designs from landscape designers, &c., resident in Ireland for laying out the reclaimed ground at Fairview, Dublin, and for the conversion of same into a public park. Premiums of £50, £10, and £5 will be awarded for the first, second, and third designs respectively, as selected. A copy of the conditions of competition, and a map of the site, will be furnished to each intending competitor on lodgment of £1, which will be returned on receipt of a design and report. Applications to be addressed to the Secretary, Cleansing Committee, Dublin Corporation, Lord Edward Street, Dublin.

CONTRACTS OPEN.

ASHFORD.—June 25.—For summer repairs at the Ashford Fairlawn County School, for the Kent Education Committee. Mr. J. Quick, local secretary, Technical Institute, Folkestone.

BLACKPOOL.—June 23.—For excavating and underpinning with brickwork at the central electricity works, for the Corporation. Mr. John S. Brodie, borough surveyor, Municipal Buildings, Blackpool.

BOOTLE.—June 30.—For the work required in connection with proposed alterations to existing office and sheds in the Town Hall Yard, for the Corporation. The Borough Engineer's Office, Town Hall.

BRIERFIELD.—June 26.—For the erection of two retaining walls at the sewage works, for the Urban District Council. Deposit £1 1s. Mr. B. Halstead, surveyor, Town Hall, Brierfield.

CASTLEFORD.—For conversion of property, Carlton Street, into shops, offices, &c., for Mr. T. C. Binks. Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

COCKERMOUTH.—June 21.—For the rebuilding of the back wall of their No. 3 retort setting, for the Gas Committee. Mr. E. D. Wootten, manager and secretary, Gasworks, Cockermouth.

EAST BIERLEY.—For the erection of two detached houses and boundary walls in Moorhouse Lane. Mr. A. T. Verity, architect, Moordene, Bradford Road, Birkenshaw, Bradford.

GODALMING.—June 30.—For erection of a sanatorium at Highdown, Hyde Stile, near Godalming, Surrey, for the Metropolitan Asylums Board. Deposit £5. Mr. E. T. Hall, F.R.I.B.A., architect, 54 Bedford Square, W.C., and the Office of the Board, Embankment, E.C.

HADLEIGH (ESSEX).—July 6.—For altering and decorating the premises known as Homeleigh, George Street, in the preparation of same as a cottage hospital, for the Committee of the Hadleigh and District Cottage Hospital. Mr. C. Dudley Bright, Polstead Heath, Polstead, Colchester.

HAWKINGE.—For summer repairs at the Council school, for the Kent Education Committee. Mr. W. J. Spicer, correspondent, Technical Institute, Ashford.

HYTHE.—June 25.—For summer repairs at the Hythe Special Subjects' building, for the Kent Education Committee. Rev. H. D. Dale, correspondent, The Vicarage, Hythe.

IRELAND.—June 21.—For building new sanatorium at Ballymaley, Ennis, for the Committee of Management, County Clare Sanatorium. Deposit £3 3s. Mr. W. H. Allen, C.E., The Terrace, Ennis.

IRELAND.—June 22.—For erection and completion of a dwelling house at Farranfad. Mr. R. McCullen, C.E., Minerstown, Clough, co. Down.

IRELAND.—June 23.—For erection of four labourers' single cottages and one double cottage, and for fencing the plots attached thereto, for the Claremorris Rural District Council. A contractor may tender to erect all or portion of the cottages. The works are to be completed within six months after they have been laid out by the engineer and architect, Mr. M. Cosgrove, under penalty for delay. The Clerk of the Rural District Council, Claremorris.

IRELAND.—June 24.—For erection of a shed at the Museum (rear of Central Library), Royal Avenue, Belfast, for the Corporation. The City Surveyor's Office, Belfast.

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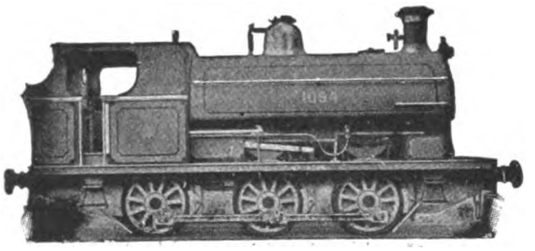
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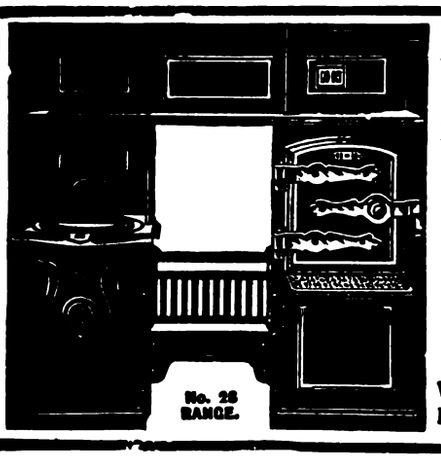
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LEEDS.—June 21.—For the erection of a two-storey building in Grape Street, Hunslet, for the Corporation. Apply to Mr. N. C. Hefford, manager, 1 Whitehall Road, Leeds.

LEYTON.—June 29.—For cleaning, painting, and repairing various schools during the summer vacation, for the Urban District Education Committee. Send applications and £5 deposit by June 23 to Mr. W. Jacques, A.R.I.B.A., the committee's architect, 2 Fen Court, Fenchurch Street, E.C.

LONDON.—June 24.—For (a) alterations to drains at the St. James Road branch institute; (b) new small brick chimney to steam boiler at St. James Infirmary, for the Guardians of the Wandsworth Union. Mr. F. J. Curtis, clerk, Union Offices, St. John's Hill, Wandsworth, S.W.

LONDON.—June 29.—For the erection of a labour exchange at Canning Town, London, E., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. Mr. H. Ashmead, H.M. Office of Works, 12 Queen Anne's Gate, Westminster, S.W.

LONDON.—June 30.—For repairs and cleaning works at the Eastern Fever Hospital, Homerton Grove, Homerton, N.E., for the Metropolitan Asylums Board. Deposit £1. The Office of the Board, Embankment, E.C.

MANCHESTER.—June 23.—For the reconstruction of the church organ at their Withington Institution, for the Manchester Guardians. The Master of the Institution, Nell Lane, West Dewsbury, Manchester.

MARGATE.—June 21.—For alterations to Messrs. Timothy White Co.'s premises at Northdown Road, Cliftonville. Messrs. Moodey & Chrisfield, architects, Station Gates, Broadstairs.

MIRFIELD.—June 21.—For the following works, for the Mirfield Education Sub-Committee: Mirfield Knowl Council School, painting and repairs in offices; Hopton Council School, repairing footstones and lead flashings. Mr. F. Parker, divisional clerk, Education Offices, Elland.

PAIGNTON.—June 23.—For the erection and completion of a bakery at Paignton, for the Paignton Co-operative Society, Ltd. Deposit £1 1s. Mr. F. W. Vanstone, architect, Palace Chambers, Paignton.

PLYMOUTH.—June 21.—For alterations and repairs to No. 34 Exeter Street, for the Corporation. Mr. J. Paton, borough engineer and surveyor, Municipal Offices, Plymouth.

RAINHAM.—June 25.—For summer repairs at the Council school, for the Kent Education Committee. Mr. S. Quinnell, Russels, correspondent, High Street, Rainham.

RISCA (MON.).—June 21.—For erection of proposed institute at Risca (Mon.). Send in names by June 21 to Mr. R. L. Roberts, M.S.A., Abercarn, Mon.

ROCHDALE.—June 22.—For the reconstruction of the turret over the assembly hall, for the General Purposes Committee. Mr. P. W. Hathaway, A.R.I.B.A., Town Hall, Rochdale.

SCOTLAND.—June 21.—For the mason, carpenter, slater, plumber, plaster, and painter and glazier works of villa to be erected in Cullen, for Councillor Harthill. Mr. J. Christie, architect, Banff.

SCOTLAND.—June 21.—For the erection of a coal store, including brickwork, steel roof, asbestos cement corrugated covering, plumber, entrance road, and brick-flooring work; also alternative scheme of brick building with reinforced-cement roof, for the Motherwell Corporation Gas Department. The Corporation Gas Engineer, Mill Road, Motherwell.

SCOTLAND.—June 24.—For the joinery fittings and finishings in the public office, Glasgow head post office, for the Commissioners of H.M. Works, &c. Deposit £1 1s. The Clerk of Works, H.M. Office of Works, Head Post Office, Glasgow, and H.M. Office of Works, 3 Parliament Square, Edinburgh.

SHOTTON COLLIERY.—June 25.—For taking down, removing, re-erecting at Shotton Colliery and making good where required the iron school with slated roof, situated at Easington Colliery; also, separately, for taking down, removing, and re-erecting at Crook and making good where required the iron school with corrugated iron roof, also situated at Easington Colliery, for the Durham County Education Committee. The Clerk to the Education Committee, Shire Hall, Durham.

SHREWSBURY.—June 22.—For building concrete block boundary wall and forming footpath between New Park Road and the canal towing path, Castle Fields, for the Corporation. Mr. A. W. Ward, A.M.I.C.E., borough surveyor, The Square, Shrewsbury.

SILSDEN.—June 23.—For erection of stabling accommodation, for the Midland Railway Company. The Engineer's Office, Derby Station.

STEETON.—June 23.—For erection of stabling accommodation, for the Midland Railway Company. The Engineer's Office, Derby Station.

THORNHAM.—July 7.—For small alterations, repairs, and improvements at the Thornham school, for the Norfolk Education Committee. Send names and £1 1s. deposit by June 21 to the Secretary, Education Committee, Shire Hall, Norwich.

TONBRIDGE.—June 28.—For the erection of a post office and telephone exchange at Tonbridge, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The Postmaster, Tonbridge, and H.M. Office of Works, &c., Storey's Gate, London, S.W.

ULVERSTON.—July 5.—For erection of a new shed at Low Mill Tannery, Ulverston, for Messrs. Randall & Porter, Ltd. Messrs. J. W. Grundy & Son, architects and surveyors, Ulverston.

WALES.—June 21.—(Contract No. 19) For the construction of a masonry retaining wall, about 335 yards in length, with carriageway and footway works and four-stall urinal, at Duffryn Road, Caerau, for the Maesteg Urban District Council. Deposit £1 1s. Mr. Samuel J. Harpur, M.Inst.C. and M.E., the engineer to the Council, 32 Commercial Street, Maesteg.

WALES.—June 21.—For the following works, for the Glamorgan County Council—viz.: (1) Temporary additions to Beddau Council School, Llantrisant; (2) playsheds at Cornelly Council School; (3) playsheds at Kenfig Hill Council School; (4) playsheds at Bargoed Girls' and Infants' Council School; (5) playsheds at Bargoed Boys' Council School. The Glamorgan County Hall, Cardiff.

WALES.—June 24.—For the renovating of the Welsh C.M. chapel, Aberfan, for the Trustees. Mr. G. L. Rees, architect and surveyor, Bedwas.

WEST ARDSLEY.—For erection of additional conveniences to Westerton School, for the Ardsley (East and West) District Education Committee. Mr. A. Angus, West Riding Education Offices, Northgate, Wakefield.

WILTS.—June 25.—For alterations, additions, repairs, and renovations, &c., at the various Council schools during the summer vacation, for the Wilts. County Education Committee. Mr. J. George Powell, county surveyor, Trowbridge.

WREXHAM.—July 8.—For the following works, for the Corporation: (1) redecorating Corporation cottage, Holt Road; (2) redecorating cemetery lodge; (3) painting sheds, &c., Smithfield; (4) alterations to offices at Guildhall. Mr. J. England, borough engineer, Willow Road, Wrexham.

TENDERS.

BRISTOL.

For the erection of a villa in Downend Road, Kingswood, for Mr. E. Saunders. Mr. G. C. BAIN, surveyor, Kingswood, Bristol.

Williams & Sons	£873	0	0
Ayres	835	0	0
Taylor	832	16	0
POWELL BROS., Abersychan (*accepted*)	800	0	0
Jefferies & Son	750	0	0
Milsom	740	0	0
Wilmott	733	0	0

CAMERTON.

For erection of a stable and coach-house adjoining the Camerton Smallpox Hospital Board. Mr. H. B. WILLIAMS, architect, Town Hall, Workington.

Johnston	£280	0	0
Wilkinson	276	0	0
Douglas	272	0	0
L. FERGUSON & SONS (*accepted*)	266	0	0
Architect's estimate	268	0	0

All of Workington.

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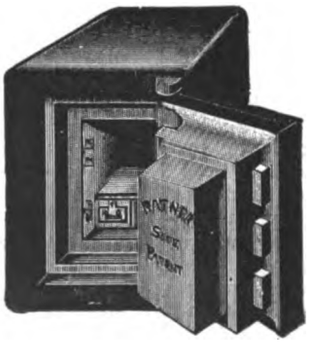
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LONDON.

For the repainting of Highgate Archway and the bridge carrying the South-Eastern and Brighton Railways over the southern approach to Tower Bridge, for the London County Council.

Westwood & Co.	£1,288 6 10
Triggs & Co.	1,139 6 10
Fenn	1,121 4 4
Inns	1,060 5 3
Chappell	1,028 0 2
Dudley	1,023 17 C
Vigor & Co.	992 0 0
L. KAZAK, Belvedere, Kent (*accepted*)	916 0 0
Chief Engineer's estimate	1,000 0 0

For installing heating apparatus in connection with the remodelling of the Wolverley Street School, Bethnal Green, for the London County Council.

Brightside Foundry and Engineering Co.	£825 0 C
Cannon & Hefford	746 0 C
Christie	738 15 0
Davies	725 0 0
Yetton & Brockett	679 0 C
Palowkar & Sons	612 0 0
Cannon & Sons	594 0 C
J. & F. MAY, 33 Whetstone Park, Lincoln's Inn Fields (*accepted*)	589 0 C
Architect's estimate	630 0 0

For installing heating apparatus in connection with the remodelling of the county secondary school for girls, Forest Hill, Lewisham, for the London County Council.

Cannon & Hefford	£1,878 0 0
Kinnell & Co.	1,725 0 0
Freer	1,650 0 0
Brightside Foundry and Engineering Co.	1,613 0 0
Yetton & Brockett	1,598 0 0
Knight & Sons	1,594 0 0
Palowkar & Sons	1,590 0 C
Cash & Co.	1,498 0 0
Cannon & Sons	1,490 0 0
T. W. VAUGHAN & Co. (1914), LTD., 22 Cross Street, Islington (*accepted*)	1,050 10 0
Architect's estimate	1,440 0 0

NUNEATON.

For erection and finishing of new dye works, for Messrs. Oram Bros. Messrs. STOCKDALE HARRISON & SONS, architects, Leicester.

Hayes	£7,718 6 3
Pattinson & Sons	7,642 0 0
Kelley & Son	7,588 0 0
Sharp & Sons	7,295 0 0
Moss & Sons	7,246 0 0
Wellerman Bros.	7,212 8 0
A. R. & W. Cleaver	7,210 0 0
Corah & Sons	6,958 0 C
Clarke & Garrett	6,937 0 0
Smith	6,763 0 0
Fox	6,740 0 0
Chapman & Son	6,669 0 0
Cole & Son	6,665 0 0
BOWLES & SON, Leicester (*accepted*)	6,612 10 4
Warrington	5,998 0 0

The figures do not include the steelwork.

WELLESBOURNE.

For the erection of a Wesleyan Methodist Church at Wellesbourne, Warwick. Mr. F. W. B. YORKE, Licentiate R.I.B.A., architect, Birmingham.

Crouch	£1,511 7 C
Cherry & Son	1,198 14 6
Colin Hughes & Adams	1,184 0 0
Chivers	1,181 10 0
Espley & Co.	1,175 0 0
Thorpe	1,164 0 0
Cox & Co.	1,160 0 0
Fincher & Co.	1,145 0 0
O. ENGLAND, Wellesbourne (*accepted*)	1,090 0 0
Matthews & Mullis	1,077 19 10

THE *Diario Oficial* (Montevideo) of April 24 publishes a law approving the programme of works presented by the architect of the proposed Government Palace at Montevideo. The total estimated value of the work on this building is about £1,365,700.

ENGINEERING PLANT AT THE REGENT PALACE HOTEL.

THE Regent Palace Hotel, Piccadilly Circus, which is allied with the "Strand Palace," is said to be the largest hotel in Europe. In accommodating some 1,500 resident visitors, in addition to a large restaurant business, it would certainly appear to have considerable justification for the claim, and it is, therefore, not remarkable that the engineering plant should present several very unique features in addition to the "massive" scale on which it is designed. Few outside those interested in hotel equipment realise the extensive nature and completeness of the electrical heating and ventilating systems in an establishment of this kind.

Everything that money, expert knowledge, and a desire for perfection could provide would appear to have been incorporated.

The heating, ventilating, and general engineering plant was designed by and installed under the direction of Mr. A. H. Barker, B.A., B.Sc., Wh.Sc., consulting engineer and professor in heating and ventilating engineering at the London University. The electrical equipment, lighting and power, wiring, &c., was carried out by the company's own staff, under the direction of the chief electrical engineer, Mr. Cushion, and to the directors of the Strand Hotel, Ltd., and to these two gentlemen we are indebted for particulars of the plant and an opportunity of inspectigg same.

Heating, Ventilating, and Hot-water Supply.

This work was executed by Messrs. J. Jeffreys & Co., Ltd.

The plant may be regarded as complete as that in any similar building in the world. There are in all some 300 miles of pipes in the building and 15 miles of air ducts.

Warming.—The warming is effected partly by hot water radiators, partly by vacuum steam, and partly by electric heaters.

The whole of the reception-rooms on the basement, mezzanine and ground floor are supplied with low-pressure hot-water radiators from duplicate steam heaters fixed in the sub-basement. The circulation is by natural gravity accelerated when necessary by electrically driven pumps. The arrangement is such that the temperature of the water circulating to each of the principal reception-rooms is under independent control.

The 1,028 bedrooms are warmed by electrical heaters, the bedroom corridors by radiators on the vacuum-steam principle. Each corridor is under separate control, and the whole service is operated from the sub-basement.

Ventilation.—In order to avoid the "stuffy" feeling of heated air, the systems of ventilation are in all cases entirely distinct from the heating. Some idea of the immense power of the ventilating plant may be gathered from the fact that the fans alone supply enough fresh air in one hour to fill St. Paul's Cathedral and Westminster Abbey together.

The ventilation of the principal reception-rooms is on what is known as the "balanced system." Fresh cooled air is supplied by two large general fans. Each principal room has its own independent extract fan. Fresh air is thus forced in while vitiated air is simultaneously withdrawn from the room in any desired quantity. This highly desirable but elaborate system is adopted to avoid the production of draughts. For ventilation of the main reception-rooms fresh air is admitted into a large settling chamber fixed near the corner of Air Street and Glasshouse Street. In this chamber all the heavier dust and other impurities are allowed to settle. The air next passes through one of the largest air washers in the world, where it is thoroughly cleansed of dust and other impurities, cooled, and humidified. In the hot days of summer provision is made for cooling the air through a considerable range by refrigerator, cold water, or ice, as required. In cold weather it is suitably tempered by passing over a battery of warm pipes. From the air washer it is led through two centrifugal fans, and driven through underground ducts to all parts of the building. The ducts are so arranged that either fan can be employed for the supply to the whole building, thus minimising the risk of heated air. There are two ducts for each room, one for warm and the other for cold air. Warmed or cooled air can be admitted in any proportion to any of the principal rooms independently of one another, so that one room can be supplied with cold air and an adjacent one simultaneously with warm air.

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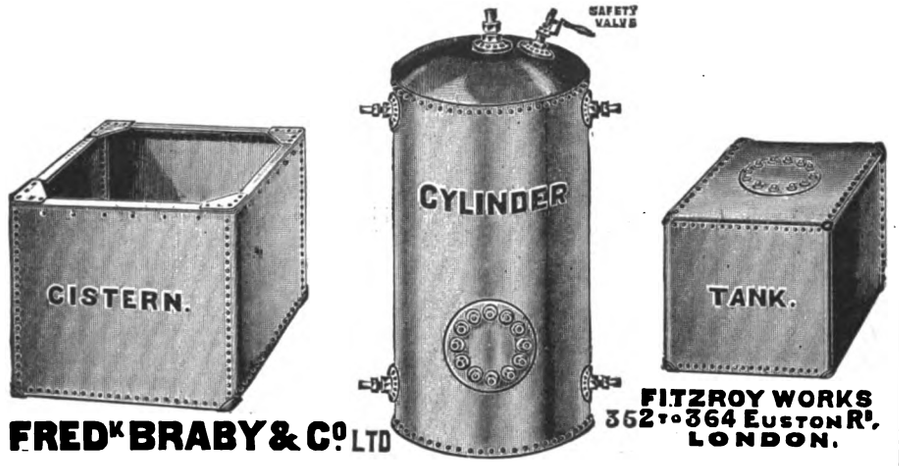
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The kitchen is of unusual height and size, and fitted with probably as fine a cooking plant as is to be found anywhere in the world. Steam, gas, electricity, and coal fuel are all employed. The whole of the ceiling is false, with a ventilating space over the entire area. It is perforated by innumerable holes cast in removable panels, so that the entire ceiling can be periodically taken down for cleaning. From this false ceiling space the air is drawn along a large duct to a fan, similar to those employed in the ventilation of a mine, fixed on the mezzanine floor. This fan is of sufficient power to change the whole of the air in the kitchen and surrounding rooms every one and a-half minutes. The air is delivered into a large duct which conducts it to the extreme top of the building. The smell of cooking is thus entirely avoided.

A large room is provided for airing all the linen used in the hotel. This is fed by a continuous stream of warm fresh air supplied by a "Sirocco" fan, driven by a 5-h.p. motor, and steam heater.

Each bedroom is separately ventilated by a trunk carrying vitiated air to the top of the building. Fresh air is introduced at the will of the occupant either from the warmed corridor or from adjacent areas. The lavatories, baths, and w.c.'s throughout are similarly ventilated by extract fans, which withdraw the air to the roof.

Hot Water Supplies.—As every bedroom has its own hot-water supply tap, and as there is more than liberal bath accommodation, the provision of hot water was one of the most difficult problems in the entire installation.

The supply to the hotel, and to every bedroom in it, is furnished by three very large "Calorifiers," or steam heaters, fixed in the sub-basement heater room, adjacent to the main boilers. The temperature of the water is automatically controlled by electrical valves. There are also two large storage cylinders fixed on the roof, holding 20,000 gallons of hot water. The hot water is circulated to the taps by natural gravity, accelerated, when necessary, by a pump. It is thus led to every bedroom and to the innumerable sinks, lavatories, and baths.

Control.—The method by which the whole of this huge plant is to be brought under the control of a single man is one of the most remarkable features in the entire plant.

In the heart of the building is situated the "control room," or engineer's office. Here will be shortly fixed electrical instruments enabling the engineer in charge to determine, without leaving his seat, what is the temperature at any one of about 250 points in all parts of the building. Any five of these points can be simultaneously connected at will to a multiplex self-recording instrument enabling a simultaneous permanent record of temperature changes at all these points to be obtained. Here are also to be fixed instruments for measuring the volume of air being supplied at any time to each of the reception-rooms and its temperature. The room will also contain indicators showing the water level in each one of the sixteen large water tanks fixed in all parts of the building, the boiler pressure, the temperature of the hot water supply, and the proportion of CO_2 in the flue gases in the chimney. Thus the engineer in charge will have a complete bird's-eye view of the working of the entire plant. He can not only inform himself by means of these instruments what is going on in the building, but he can also directly control the process without leaving his office. By pressing a button he will control the heat in any of the principal rooms; by pulling a lever he regulates the quantity or the temperature of the air passing along any of the ducts. He is to be in telephonic communication with all parts of the building.

The plant is so designed that repairs can be effected without a workman being seen. All this immense mass of pipes are fixed in the sub-basement and in concealed vertical ducts and under floors. The visitor does not see any one of the 300 miles of pipe which minister to his comfort and convenience.

Pneumatic Despatch System.

The system installed by the Lamson Pneumatic Tube Co., Ltd., is unique in its departure from customary practice in that all stations do not radiate from one point. The service is really a series of independent lines between various points. Thus the book-keepers' department is in direct communication (to and from) with still-room, linen room, restaurant service, restaurant à la carte service, and parcels' office.

Each of the following departments can communicate with each other:—

Reception, luggage and parcels.
Still-room, kitchen.
Ground-floor bedrooms (Sherwood Street), still-room.
Restaurant, kitchen.
Telephone inquiry, telephone office.

The service rooms on each of the nine floors are connected to still-room.

Restaurant à la carte with kitchen à la carte.
Ground-floor bedroom and still-room (Glasshouse Street).
Staff messroom and kitchen.

The service consists of two sizes of tubing—2¼ in. outside diameter and 1½ in. In the installation there are over 4,000 feet of tubing, 1,000 connecting sleeves, and 175 bends. The carriers are drawn through the tube by suction, which is maintained by means of a blower driven by a 6-h.p. motor.

Electric Lighting and Power.

Some idea of the extensiveness of the lighting and power installation may be gauged by reference to a few figures.

There are 1,028 bedrooms, any one of which is arranged to be provided with a 1½-kw. Belling heater. There are 6,000 Osram lamps installed, and the total amount of cable used is over 180 miles run in upwards of 200,000 feet of screwed conduit. There are also a large number of electric motors for driving fans, &c., in addition to those required for the thirty-two lifts.

Main Supply.—The whole of the current is supplied at 220 volts by the St. James's and Pall Mall Supply Co., Ltd., in Carnaby Street close by the hotel. Two 0.8 square inch cables are run directly and independently into the building from the Carnaby Street sub-station for the heating circuit, and the other main cables are proportionately large.

They are taken into two separate switchrooms through the company's main switch fuse and a circuit breaker. Three systems are provided, for general lighting, "police" or "council" lighting, and for the general power service. Each has a capacity of 300 amperes, making the total capacity, apart from the special service to the electric heaters, of 1,800 amperes.

It may be incidentally mentioned that the "police" or "council" service is a separate service required by the regulations in all public buildings of this kind.

The main service is taken into three main distribution boards, from these are taken cables which serve each floor independently. Every floor is also separately metered and protected by enclosed cartridge fuses of G.E.C. make.

The distribution board controlling the heating circuits is in a separate chamber in the sub-basement, and consists of sixty separate D.P. fuses and switches, and is over 30 feet long. From this board are taken fifty-six pairs of 19/16 cables to the various floors, and on each floor there are six sub-distribution boards. The sizes of the cables and feeders are designed to allow the whole of the heaters to be turned on at one time.

Power.—The most important section of the power is that required for driving the ventilating fans and lifts, which systems are described elsewhere.

The electric motor nevertheless plays an important part in the kitchen equipment, &c.; for example, there is a 4-h.p. motor driving a "Hall" refrigerator, an ice-making machine, an almond crusher, and a "whisk." In the French bakery there is a 2-h.p. motor-driven bacon-cutter and a mincing machine.

The refrigerating plant for the cold storage rooms is driven by a 18-h.p. motor with a brine circulating pump driven by a 2¾-h.p. motor. There are also a large number of buffing machines for boot-cleaning, driven electrically.

The vacuum cleaning plant, which feeds four points on each floor, is operated by an 8-h.p. motor.

Lighting.—For the lighting of the building some 6,000 Osram lamps have been installed, and the wiring has been laid out in two systems to comply with the L.C.C. regulations. The required number of lamps in all the public portions of the hotel are supplied from what is known as the "council main," which feeds two principal distribution boards. There are also two general lighting boards, from which a supply is given to the rest of the lamps in the building. Convenient control for all the bedroom lights is provided. Each room is provided with two lamps, either of which is controlled from a three-point switch at the bedside. A certain number of cross and corner corridor lights are supplied from the alternate one of the two distinct systems into which the lighting supply is divided. In this simple manner the important lights in corridors are rendered independent of the same general circuit which supplies bedrooms immediately adjoining those corridors.

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These special corridor lights are controlled by master switches at central points.

The general scheme of illumination is on the semi-direct system, and for this purpose a variety of designs of fittings by the Bromsgrove Guild have been installed. In the dome of the Rotunda Court a novel plan has been adopted of introducing opal bulls'-eyes into the risers which support the glazing of the dome. Behind each opal is a 30-watt lamp. Around the dome cornice is a ring of lamps, which are concealed from view at the floor level, but which throw a considerable volume of light upwards into the dome.

Electric Bells.—The scheme adopted has greatly simplified the usual bell signalling in large hotels. Each floor is complete in itself and divided into eight sections, each with a large indicator. By means of a four-point relay an indicator is also operated in the service room showing which section has been rung up. When the chambermaid goes to that particular section she is shown by the section-indicator the number of the room calling.

Wiring.—The whole of the wiring is carried out in screwed steel "Geekoduct" conduit, with brass unions, which are designed to secure lasting mechanical and electrical continuity throughout the system. Throughout the whole scheme a special water-tight junction-box has been used at frequent intervals. This, together with the conduit lay-out, permits of the withdrawal of any length of wire or cable without any disturbance of the permanent structure, decorations of the building, the plaster or cement in which the conduit is buried.

The Electric Lifts.

There are five electric passenger lifts, each constructed to carry a load of 15 cwt. at a speed of 300 feet per minute, the height of travel varying from 85 feet to 122 feet 3 inches—this lift travelling from the basement to the roof.

The cages are of handsome design and fitted with Waygood-Otis safety apparatus, designed to arrest the descent of the cage in case of failure of the suspension ropes. The winding machines are of the firm's latest pattern, with powerful motors coupled to machine-cut worm and wheel winding gear of highest efficiency, and designed for smooth running.

Each lift is controlled by pilot switch in the cage operated by removable handle which actuates the main controller, which is specially designed to secure smooth and gradual starting and stopping, this, of course, being an essential feature in electric lifts running at high speeds.

In connection with the passenger lifts, a signalling arrangement is employed, which is the latest device for this purpose.

In each cage is fitted a flash light annunciator signal fixture. When a passenger wishes to call a lift he pushes the button on the enclosure and this illuminates in each cage a miniature lamp representing that particular floor, and also operates a small buzzer to call the attention of the operator to the signal. The first cage arriving at the floor from which the signal is given will stop and pick up the passenger, and upon leaving the floor will automatically extinguish the signal lamp in all cages. The signal is entirely automatic in its operation, and gives the operator no opportunity to extinguish it until he has reached or passed the floor from which the signal is given.

The indicator in each cage shows to the operator the direction in which the passenger wishes to travel as well as the floor on which he is standing. One call-push on each floor is arranged for two lifts, and one for the other three lifts which are grouped together.

On the ground floor in connection with each lift is provided a mechanical indicator with arrows working on a semi-circular dial, which will show the position of each lift in the shaft. Up and down signal lights are fitted on intermediate floors, which indicate the direction in which the lift is travelling.

This arrangement gives the most complete and convenient system for operating the lifts in groups to make sure that a passenger requiring the use of the lift receives prompt attention, and at the same time avoids two or three lifts going to the same floor to answer a call.

There is also an electric luggage lift carrying a load o 15 cwt. at a speed of 300 feet per minute, and two electric goods lifts of the same duty which travel from the basement to the ninth floor.

In all there are 32 lifts, including service and restaurant lifts.

Waygood-Otis, Ltd., have also installed a most complete hydraulic vacuum cleaning equipment, which has the great hygienic advantage of removing the dust from carpets, upholstery, &c., direct to the drain.

VARIETIES.

BARRY District Council on the 14th inst. approved plans for 52 houses proposed to be erected immediately by the Welsh Housing and Town Planning Trust, Ltd.

MR. MARTIN VAN STRAATEN, of 63 Avenue Road, Hampstead, and of Martin van Straaten & Co., 28 and 30 Little Britain, enamelled tile manufacturers, who went down with the *Lusitania* on May 7, has left £34,479.

MR. JOHN JAMES MOFFAT, of King's Norton, Birmingham, senior partner in the firm of Messrs. James Moffat & Sons, builders, Camp Hill, left estate valued at £27,471 (net personalty £8,907).

THE Water Works Committee of Dunfermline Town Council have accepted the offer of Messrs. Brown & Kincaid, contractors, Wellington Street, Glasgow, to execute work included in number one contract of their additional water supply scheme for the sum of £6,585.

MESSRS. KNIGHT, FRANK & RUTLEY have published the following statement with regard to the forthcoming sale of Stonehenge: "A good deal of misconception appears to exist in respect of the sale of Stonehenge, and on behalf of Sir Cosmo Antrobus we write to explain that the property is under the protection of the Ancient Monuments Act, which ensures its preservation. Although Stonehenge is to be included in the sale of the Amesbury Abbey Estate in September next Sir Cosmo Antrobus, who is only tenant for life, proposes, if his powers permit him to do so, to impose conditions providing for the public having access thereto for all time. It is to be hoped, however, that Stonehenge may be bought either by the Government or by a learned society, and our instructions are that if any reasonable proposal be made for its acquisition with the intention of preserving the monument in the public interest, we are to facilitate a sale by private treaty before the auction."

TRADE NOTES.

THE recent anti-German riots in the East End of London produced many piquant incidents arising out of the impotence of the police. A curious sight took place outside a (non-German) jeweller's shop, where, after the smaller contents had been looted, a 7-cwt. John Tann's "Anchor Reliance" safe was carried into the street for the purpose of forcing it open. The burly ruffians misjudged the resisting quality of their prize, for they tried to effect their purpose by continually crashing the safe on to the pavement. Being of a good make, this unscientific expedient merely damaged the paint. Resort was then had to hammers and chisels, but without getting any nearer the objective, although the hinges and handles were smashed off and every effort made. The owners have since written to Messrs. John Tann, Ltd., to say the safe is now in their possession, "with its valuable contents intact, and only requires reinstating to be as serviceable as ever." Tests have been made by Curtis & Harvey, Ltd., the great explosive experts, on a safe fitted with John Tann's patent high-explosive resisting device. They report that the explosive apparently shattered the locks, but "notwithstanding this we were unable to open the safe by any mechanical means at our command, and so far as an external examination goes the safe was intact and had withstood this severe test very satisfactorily."

H.M. CONSUL at Milan (Mr. J. H. Towsey) reports that a Brescia firm of builders desires to secure the representation of United Kingdom manufacturers of fittings for villas and cottages, *i.e.*, locks, bolts, flooring, roofing, &c. A booklet published by the firm showing the scope of its work may be inspected by United Kingdom manufacturers at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

THE architects engaged in the repair work on the boys' bath at "Cheetham's" Hospital, Manchester, experimented before waterproofing it. They report both the results of the experiments and of the work on the bath were successful. We now understand they are adopting the same waterproofer "Pudlo" for work in connection with the Stockport Infirmary extension.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, June 25.

National Road Exhibition to be opened at the Royal Horticultural Hall, Vincent Square, S.W., by the Right Hon. Walter Long, M.P., President of the Local Government Board, at 4 P.M. (six days).

Monday, June 28.

National Road Conference to be opened at Royal Horticultural Hall, S.W., at 2.30 P.M.

Tuesday, June 29.

Society for the Promotion of Roman Studies: Paper entitled "The Influence of Religion on the Rise and Continuance of the Roman Empire," by the Viscount Bryce, O.M., D.C.L., LL.D., F.R.S., F.B.A., at the Society of Antiquaries, Burlington House, W., at 4 P.M.

Wednesday, June 30.

Royal Archæological Institute: Annual General Meeting at the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

INDIVIDUALITY.

THE value of an artist's work we recognise generally as being, to a large extent, if not entirely, due to the degree to which it manifests the expression of his individuality, and to the character of the individuality so expressed. Hence a consideration of the meaning of individuality, its causes and effects, must be of interest to all who would understand or rightly appreciate art and artists. It need not, as a philosophical study, necessarily be of interest to artists, for the artist is most often too deeply concerned with the expression of his own individuality, to tending its culture, rather than to investigating its growth so that philosophical inquiry is entirely beyond the range of his outlook. In these times the impetus towards output is, for many artists, sadly lacking. The painter, indeed, can continue to paint, for his material costs but little, but the sculptor, the architect, the metal-worker, and all craftsmen whose art is concerned with those things that are useful as well as beautiful, must feel the want of the incentive towards production that is in many cases absolutely essential when patron, or client, or customer, call him what you will, has his thoughts directed in quite another direction than that of art.

So it is probably due to the war that we have brought before us this year a philosophical essay * by Mr. Voysey on the text of individuality. In his preface the author says: "I have written these chapters in the earnest hope of encouraging my fellow-men to believe and feel the creative spirit within each and every one, which, while stimulating thought, leads on to mutual sympathy and true union. And so, through the working of natural laws, we come to create that beauty which draws us onward and upward."

Whilst we may doubt the necessity for encouragement thus offered, not because we dispute the existence of the creative spirit within each and every one, we nevertheless have enjoyed the enunciation of the views that Mr. Voysey puts forth on the subject of individuality and its antithesis collectivism. If we admit, however, the existence universally of the creative spirit, it is obvious that the energy of that spirit is not alike in all, for if it were so, all men would be productive artists or productive materialists. The creative spirit differs, and hence results individuality. Even amongst artists there exists a variety of medium by which the individuality of each is best expressed. Sometimes, too, the circumstances and environment of the individual lead his activities in a direction other than that best suited for the most favourable development of his personality. It is remarkable, for example, how many quantity surveyors are amateur water-colour painters of no mean ability.

We can hardly follow Mr. Voysey in his proposition that individuality leads on to mutual sympathy and true union in every case. It is too often the fact we fear that individuality develops into egoism, into a conviction that the individual personality which leads one artist to express himself in a particular manner, is superior in rightness to that otherwise expressed by another artist. The more sincere and the more earnest the individual, the greater danger that he may be led to judge that those who do not agree in his particular method must be wrong. It is only by a recognition of the possible rightness of other men's views and work, even when they are different from one's own, that one can attain to sympathy with their individuality.

The recognition that others may be as nearly, if not quite, as right as ourselves, induces a toleration of their thought and action which makes for a true union based upon sincere sympathy. The ways of others may not be the same as our ways, but if we are sufficiently humble not to place ourselves upon an egoistical pinnacle of superiority, we must grant them the same sincerity that we claim to actuate our own thought and action.

This recognition of the rightness possible in others does not necessarily make for collectivism, which, says Mr. Voysey, with convention and fashion, "all derive their power through the suppression of the individual." In this grouping he perhaps goes too far. There may exist a collectivism which is not convention or fashion, but the result of the synchronism of a number of individualities, which turn naturally in the same direction because they are all on the same path to a right destination. In Nature we see a row of Lombardy poplars collectivist in their vertical character of growth, not from convention or fashion, but because it is their natural growth. It does not necessarily, therefore, follow that an established mode, a national style of architecture, is the result of either convention or fashion, still less that it stifles and precludes individuality. In the days of the Gothic revival, the prevailing mode did not extinguish the individuality of Street, Burges, Godwin, and others of their contemporaries.

So far, indeed, does the adoption of a prevalent mode not mean the suppression of individuality, that there is a danger lest the attempt to maintain individuality by departure from the mode may result in its exaggeration into eccentricity. The rapidity with which modes in architecture now change does not imply whimsicality of fashion; rather is it a logical outcome of new materials and methods of manufacture, new tools, and fresh conditions added to, in not a few instances, by the expression of an individuality stronger than usual, since

* *Individuality.* By Charles Francis Annesley Voysey. And published by Chapman & Hall, Ltd., London. 3*s.* 6*d.* net.

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one departs from the prevalent mode because he feels that in another direction he can better find fitting opportunity for his personal expression. Others recognise that the new path suits them also better than the old, and the collectivist journeying together may seem to be but the following of Fashion's lead.

An intense desire to give evidence of individuality, whether actuated by an egoistic feeling of superiority or by a craving for distinction, may result in notoriety, but scarcely in popularity. Its usual result is eccentricity. Individuality should, indeed, be sub-conscious rather than conscious, the result of an intention to do what each feels to be right in itself; not because it is different from other men's methods, nor because it measures its rectitude by the standard of a prevalent mode.

NOTES AND COMMENTS.

WE trust that it may be found possible for Stonehenge to be purchased by the National Trust when the sale of the Amesbury Abbey Estate is held next September. Of all the historic monuments in the kingdom there can scarcely be any which is more properly fitted than Stonehenge to be the property of the nation. It was undoubtedly the prehistoric national cathedral long before Westminster Abbey or any other Christian shrine existed, and its possession in private ownership is an anomaly. Even to this day our most popular festivals are the lineal descendants of those celebrated and probably primarily established at Stonehenge. It is quite true that the anxiety which, at the time of the Stonehenge litigation in 1905, was felt as to the possible fate of the stones, now no longer exists. At that time there were thinly veiled threats that the monument might be sold for exportation to America, where it would no doubt have formed a unique attraction in a New York park. Such an action by the owner could not have been resisted without a special Act of Parliament. It is true that Stonehenge was the first monument scheduled for protection under the provision of the late Lord Avebury's measure, the "Ancient Monuments Protection Act, 1882." But that Act, unfortunately, only came into operation with the consent of the owner, and the Commissioners of Works, the natural guardians of historic remains, had no compulsory powers. In 1913, however, the law in regard to ancient monuments underwent a welcome change; and it would now be possible to prevent the removal, destruction, or even the injury of remains such as Stonehenge.

A highly interesting monograph containing measured drawings and photographs of the old Town Hall at Manchester has recently been issued by the Manchester University Press. The volume makes a valuable record of one of the most beautiful examples of the Greek Revival period in England, the erection of which was begun in the year 1819 to the design of Francis Goodwin. The drawings are the work of a group of second and third year students of the Manchester School of Architecture, and are excellent examples of modern architectural draughtsmanship of a high order. The monograph forms the first volume of the Manchester School of Architecture Sketch Book, and is intended to be followed by future numbers containing a similar record of other Manchester buildings. Copies can be obtained from Messrs. Longmans, Green & Co. at the price of 10*s*. 6*d*. net.

It is no secret that the L.C.C. Central School of Arts and Crafts has not been so successful as might have been hoped, if not anticipated, and we are not therefore surprised that the Education Committee of the Council report as follows:—

"For some time past we have given careful consideration to the question of the appointment of a committee solely for the management of the Central School of Arts and Crafts, and we have arrived at the conclusion that some responsible body should now be created for this purpose, and that the committee should be of a special kind. There are, as the Council may be aware, three consultative committees on furnishing trades, book-production, and silversmithing respectively, which visit this school and report on those classes with which they are concerned. These committees are composed mainly of experts, and it is not our desire that their functions should be disturbed. We have accordingly arranged that these consultative committees should be represented on the proposed new body. In connection with all the Council's technical institutes and schools of art, with the exception of the Central School of Arts and Crafts, advisory sub-committees or bodies of governors have been appointed, but their orders of reference limit their powers and duties to those of an advisory character only. We think, however, that the committee appointed in connection with the Central School of Arts and Crafts should have wider powers. We have, therefore, decided to form an advisory sub-committee and to confer upon them powers of purchasing books, apparatus, materials, and stationery, powers in regard to the appointment, discipline, and dismissal of certain of the staff, arrangements for advertising the school, and communication with outside authorities.

"The new body will be called the Advisory Council of the school, and will be a Sub-Committee of the Education Committee under schedule I. (*a*) (6) of the Education Act, 1902. All reports of the Advisory Council to us will stand referred to our appropriate sub-committees.

"In pursuance of the provisions of standing order No. 116 it is necessary to obtain the Council's approval to the proposed delegation of powers. The General Purposes Committee will submit the necessary amendment of the standing orders in due course."

We learn from a recently issued circular that the Councils of the Surveyors' Institution and the Institution of Municipal and County Engineers desire jointly to direct the attention of members of the two bodies to the advantages to be obtained through co-operation between surveyors acting for public authorities and those representing private interests, where town planning schemes are under contemplation. The Housing, Town Planning, &c., Act, 1909, provides the necessary machinery for this object, and the Councils have had under consideration the means by which this machinery may best be made to work smoothly. To secure this they are of opinion that the most important matter is to reconcile the various interests affected, and that this would most effectively be done by conferences being held between the officers of the local authorities on the one hand and the advisers of land and property owners on the other, in the earliest stages of the preparation of town planning schemes. At such conferences suggested schemes should be considered on broad lines, and particular attention should be paid to:—(1) Arterial roads for through traffic; (2) estate streets (*a*) communicating streets, (*b*) subsidiary streets for estate traffic only; (3) restrictions to density of building and character of buildings (domestic factories, &c.); and (4) defining building lines on existing and proposed streets. These conferences, which could be quite informal, and might often take the shape of individual interviews, should take place freely in the initial and subsequent stages of the preparation of a scheme, so that, as far as possible, there may be agreement on the main principles before the final Local Government Board Inquiry takes place.

The adoption of such a course would prove advantageous to landowners in that objections against a scheme having been met, or desired amendments obtained, by mutual concession and discussion before the scheme had taken a definite shape, there would be few alterations to be made at the date of the application for approval of the scheme by the Local Government Board. Opposition being thus met before the more advanced steps were taken, the time employed in passing a scheme through the various stages would be reduced to a minimum, and the period during which development could only proceed slowly and cautiously owing to uncertainty as to the shape a scheme would finally take, would be corre-

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spondingly reduced. The course suggested would also prove advantageous to the officers of local authorities, as their work in preparing and obtaining approval in respect of schemes would be considerably lessened, and the possibility of future friction in carrying out their provisions would be greatly eliminated. In order to meet the difficulty, which may be advanced by surveyors representing private interests, that they are unable in all cases to obtain information concerning proposed schemes, and in order to facilitate the work of the officers of local authorities engaged in the preparation of schemes, particularly as to the book of reference, the Councils of the two Institutions have arranged that, if the officers of local authorities will notify the Secretary of the Institution of Municipal and County Engineers when they are about to prepare schemes, he will supply the Secretary of the Surveyors' Institution with the necessary information for communication to members of that body likely to be concerned, so that such respective members may get in touch with each other.

The following is an extract from the report of the Committee of Council on Education in Scotland:—"The special functions of the central institutions may be said to be (1) to provide the highest form of specialised instruction in their respective spheres, (2) to focus the work of the continuation classes, and (3) to exercise, so far as opportunity offers, a directive influence over the whole field of activity which they represent. The functions of a central institution are conceived to extend beyond the mere provision of higher instruction within its own walls. An interesting departure in what may be termed 'extension' work has been initiated by the Governors of the Glasgow School of Art who have been actively engaged in organising a lending museum scheme. This scheme provides for the collection at the School of Art of a carefully selected store of art objects, which may be had on loan by art schools and classes affiliated to the central institution. It is thus possible for schools that participate in the scheme greatly to improve their art equipment, and to obtain for their students a flow of fresh art examples of the best type. We are glad to note that this arrangement, which is likely to have valuable results, has already met with a ready response from school managers. We understand that the Governors of the Edinburgh School of Art are considering means whereby a similar organisation may be established which shall serve the art centres in the Eastern area." There are 52 schools participating in the Glasgow School of Art scheme.

We learn from the *Sussex Daily News* that the collapse of the roof of West Tarring Church, Sussex, is restricted to a slipping off of the heavy Horsham stone slabs with which the roof is covered, and is attributed by the Rector very largely to a great explosion last week, following on several others of a similar character in preceding days, the exact nature of which he said he had been unable to ascertain, but which shook the neighbourhood, and were commonly spoken of as being produced by the military in the ordinary course of their training. Wind getting beneath the slabs and lifting them up has been known to cause similar accidents, but on Tuesday night there was not enough to justify such an explanation.

The woodwork casing underneath the stone, which is now uncovered, is by no means in a decayed state, although pieces of batten picked up in the churchyard were in a crumbling condition and might in places have weakened the roofing. So heavy is the roofing that when once a portion becomes loose or detached the tearing away of a large part is an almost inevitable consequence—particularly when the roof is lofty, and the slope abrupt, as at Tarring. The damage done is very extensive. The slabs of stone—originally some two inches thick—were cemented together, and when the roofing commenced to slide off a huge portion was torn away and fell in practically one great piece. It crashed on to the lower roof, which covers the northern aisle, and slid from that on to the porch and into the churchyard, covering tombs and graves. One piece weighing 50 or 60 pounds gathered so much momentum in the fall that it was precipitated half-way across the churchyard. It was very fortunate that the fall occurred when it did, for had it happened later in the day there might have been serious injuries or loss of life. Tarring Church is one of the "show-places" of the district, and is always much frequented at this time of the year, and the roofing fell all around the main porch. Fortunately the interior of the church with its many rare features has not been damaged, and the fabric generally is intact. There are a few small holes in the exposed timbering of the main roof, and the stone slabs have crashed through the lower roof of the northern aisle in several places, and left larger cavities there, but it is a matter for congratulation that the masonry slid off instead of falling through the roof—as might well have happened had the timbering not been fairly well preserved. Viewed from the southern side, the church shows no signs of any damage at all, and as it is this side which is visible on the approach from Worthing—the northern side not being seen from the main road to Tarring village—very few people apart from residents in the locality were aware at the time of what had happened.

From the churchyard entrance on the northern side, however, the full extent of the fall was apparent, the timbering being uncovered over a large space extending from the coping at the top down to the eaves; while the churchyard was strewn with pieces of stone slab, piled in heaps in some places. It is intended to cover the roof at once with tarpaulin to keep out the weather, and it will be left thus until a scheme can be formulated for properly repairing it. The Rector anticipates that something like £400 may be required to make the damage good, and it will also be necessary to examine and overhaul the southern slope of the roof as a safeguard against a similar collapse there. Mr. Lee fears that it may be difficult to procure a sufficient quantity of Horsham stone slabs. For sentimental reasons, it is desirable that the same material shall be used if possible, and the Rector feels that all who are interested in the church would object to tiles or any other material being used because of the unsightly and "patchy" appearance that it would have—entirely spoiling its picturesque aspect. An effort will, therefore, be made to again cover the roof with Horsham stone.

In the course of his annual report, Dr. A. J. Macgregor, Medical Officer of Health for the burgh of Dunfermline, makes special reference to the Rosyth town planning scheme. "A town planning scheme," he says, "is at the root a sanitary measure, its main object being to improve the conditions of living along health-giving lines, and not merely to improve the amenity of a district. It seeks to establish a standard of housing, and so comprehensive is the Act in its application that it not only defines the units for present and future housing, but also takes under its control all building operations during the preparation of the scheme. This power of retrospective control has in the case of Dunfermline exercised an inhibitory and most prejudicial influence on building operations, and the house famine that has prevailed throughout the burgh for the last three years has been more acute than ever. Our hope of relief lies either in the acceptance of our town planning scheme by the Local Government Board, or, failing such acceptance, by the abandonment of the principle of retrospective control until our scheme can be so modified as to enable it to receive the necessary official sanction. The sanitary authorities are prohibited from making use of their statutory powers in regard to housing accommodation so long as the condemning of property only means turning out families in the street. In the altered conditions prevailing since the war broke out, it is hopeless meantime to look to a municipal housing scheme, and our future welfare, so far as housing is concerned, must centre round the fate of our town planning scheme."

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Circular letters have been received by many of our readers putting forth the plumbers' case in the dispute between them and the domestic engineers, and we are glad to know that in Birmingham at least there is a fair prospect of the demarcation of work being permanently settled.

The plumbers claimed among other things to fix the fittings of new buildings, including the installation of iron piping for hot-water supply, lavatories, and domestic supplies. The plumbers have been regarded as a class of men who work in soft metals. Many attempts have been made to secure a settlement of the questions at issue between the two societies without success.

The matter was referred to the Engineering and Allied Trades Societies' Federation, with the object of finding some satisfactory solution of the difficulties, but the plumbers took up a strong attitude, practically demanding the whole of the work in connection with the fitting up of new buildings, and they refused to allow their men on any work on which the domestic engineers might be engaged. This has had a very serious effect so far as new buildings in Birmingham are concerned. Even at the moment work on the new Children's Hospital and the Clinical Hospital is being held up in consequence of the action of the plumbers.

A committee of the federation, after having fully considered all the points raised by the plumbers and the domestic engineers, have arrived at the following decision:—

"The Engineering and Allied Trades Societies' Federation, after having heard arguments as to the demarcation of work between the Domestic Engineers and the Plumbers' Society, place it on record that the claims of the Plumbers' Society are not borne out by facts, and their action in refusing to work on jobs with the domestic engineers is detrimental to the best interests of trade unionism in the city; and, further, this federation is of opinion that the offer made to the Plumbers' Society by the Domestic Engineers' Society as a basis for working is fair and equitable."

The offer was: (1) Hot-water service may be executed by either plumbers or domestic engineers. (2) All heating installations shall be recognised as fitters' work, and shall be executed by fitters. (3) All cold-water supplies in any metal shall be recognised as plumbers' work, and be executed by plumbers.

The term fitters, it is stated, applies to domestic engineers.

The sixteenth annual report of the General Federation of Trade Unions deals with the year ended March 31 last. Alluding to the war, the report states that, in anticipation of an industrial crisis, the Management Committee, in the early days of the outbreak of hostilities, strongly advised all trade unionists to continue their full contributions. The question of demobilisation and the effect it will have on the labour market are dealt with in the following terms in the report:—

"When the war is over there will be, or at least we hope there will be, hundreds of thousands of soldier workmen seeking employment at old or new occupations. The unions will undoubtedly be anxious to help to secure their own men's reinstatement, but there will be an army of others who, on account of age or occupation, or inclination, were outside the trade unions, and these will be crowding the labour market and accentuating the difficulties of those who desire to regulate it. It will be bad policy to ignore the problem created by the competitive presence of these men. The greater the number unorganised and unprovided for, the greater the risks to standards of wages, hours, and conditions. This is preeminently a trade union question, and trade unionists should be adequately represented on any national authority created to deal with it, and they should assume their fair share of responsibility and do their fair share of work. It is no use leaving the settlement of this question until the crisis arises, or until a Government department has presented the world with a crystallised and cast-iron scheme. Those who succeed best are those who initiate, and every trade union and every trades council should have this aspect of the situation under consideration, if they would save the labour market from control by labour exchanges, plus lord-lieutenants of counties."

With regard to international matters, the report states: "While the war has interfered with international relationships, the Management Committee believe that this interference is only temporary, and that economic considerations will compel trade unionists again to extend their defensive efforts. When the war is over the pressure of industrial exploitation will compel men to forget many of the passions which hold precedence in their minds to-day."

The General Purposes Sub-Committee of the London County Council have reported as follows:

The Council on May 18, 1915, passed the following resolutions:—

1. (*a*) That, in order to comply with the requirements of His Majesty's Treasury as regards the restriction of capital expenditure during the continuance of the war, the Council do take all possible steps to limit its capital expenditure.

(*b*) That it be an instruction to all committees of the Council to take steps forthwith (i.) to postpone or delay expenditure as far as possible under existing contracts and estimates already approved by the Council; and (ii.) to refrain from submitting estimates for new proposals or works unless the same are for the furtherance of the war, or are of such urgent necessity that they must be undertaken immediately.

(*c*) That it be an instruction to all Committees of the Council to reconsider their annual capital estimates for 1915-16, in accordance with the decisions arrived at under the foregoing resolutions (*a*) and (*b*), and to forward them, as amended, to the Finance Committee at the earliest possible date.

2. That the Board of Education be informed in reply to their letter of May 3, 1915, with reference to the scheme for the reduction of the size of classes in Public Elementary Schools, that the Council will follow the course laid down by the Prime Minister in the House of Commons on May 13, 1915, when he stated that "the running contracts could be allowed to continue, subject to whatever can be done in the way of slowing down, and the new contracts should not be continued or proceeded with."

In accordance with the instruction contained in the foregoing resolution 1 (*c*), we have carefully reviewed the education capital estimates. We have borne carefully in mind the course laid down by the Prime Minister in the House of Commons on May 13, 1915, when he stated that "the running contracts could be allowed to continue, subject to whatever can be done in the way of slowing down, and the new contracts should not be continued or proceeded with."

As a result we have reduced the original total of the capital estimates from £600,000 to £480,000. This figure is based on contracts for erecting, enlarging, rebuilding, re-modelling, or adapting schools to which the Council is actually committed, an expenditure in respect of the consequential furniture and equipment, and on the estimated cost of sites which are actually in course of negotiation.

A sum of £23,700 is included in the estimates in respect of five proposals relating to technical education which, in our opinion, are of considerable urgency. They are intended to provide the technical education which will be necessary if certain important industries are to be established in London after the war, which are, at present, largely dominated by manufacturers in enemy countries. We recommend:—

"That the estimate of the expenditure of the Education Committee on capital account (Elementary and Higher Education) for the financial year ending March 31, 1916, be reduced, as written down, from £600,000 to

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£480,000 and for the subsequent six months ending September 30, 1916, be reduced from £414,810 to £57,675; and that the Finance Committee be so informed."

PROFESSIONAL CLASSES WAR RELIEF COUNCIL.

THE Professional Classes War Relief Council issues a report of six months' work which shows at once not only the great need that existed for such an organisation, but the variety of means that have been employed.

The applications during the six months ending May 6 numbered 2,000, and the number of cases dealt with or now on the books is 1,600. One hundred cases were referred to other societies. The most useful forms of assistance are: Temporary employment, subsidised employment, education and training, maternity aid, financial help and loans, medical help, hospitality, introductions, and gifts in kind of clothes and food.

The professions dealt with have included artists, authors, actors, architects, analytical chemists, clergy, chemists, coaches, craftsmen, dentists, engineers, journalists, musicians, solicitors, surveyors, stockbrokers, schoolmasters, secretaries, and teachers.

With regard to centralised forms of assistance: A maternity home of seventeen beds was opened four months ago at 13 Prince's Gate for the wives of professional men. The medical and nursing staff, with the exception of the matron, are entirely voluntary, maintenance charges only being made, and in special urgent cases these are waived altogether; twenty-seven patients have passed through, forty-seven have been accepted. In the matter of education, £1,120 has been expended. Through the generosity of headmasters and various governing bodies, 134 children who would otherwise have lost all education are becoming pupils at reduced fees at both private and public schools, and in many cases the assistance given to pupils also enables schools to continue which would otherwise have been ruined. In addition to this, thirty-three candidates are undergoing training in productive professions, such as medicine, dispensing, gardening, domestic economy, musical teaching, nursing, &c.; four have already qualified and have obtained remunerative employment, and others are about to take up their work.

In connection with the artistic professions, the "Arts in War-time" Committee has arranged four exhibitions to provide an opportunity for artists to exhibit their work, three of these, at 13 Prince's Gate, and "The Arts in War-time Exhibition of Pictures and Sculpture" at the Guildhall, opened by the Lord Mayor and organised jointly with the Imperial Arts League. One hundred and sixty-one artists have been materially benefited. The "Music in War-time" Committee has provided 1,000 engagements for, and distributed £1,604 to, musicians. Sixty-six concerts have been given in camps, 122 in hospitals, 112 in schools, clubs, &c. A grand concert, which was personally attended by their Majesties the King and Queen and Queen Alexandra, was given at the Albert Hall on April 24 in aid of the funds of the Council and the recruiting bands. All the expenses of the concerts organised by this committee have been defrayed from the funds of the Council.

The Council has enjoyed the advantage of Royal support and interest. The Queen has shown her interest in a practical way by visiting 13 Prince's Gate, the house so generously lent by Mr. Pierpont Morgan, and by a gift of £500. The Corporation of the City of London also lent the Guildhall Art Galleries for six weeks, and the Lord Mayor convened a meeting at the Mansion House in support of the Council.

Mention must be made of the debt owed to the Press for their support of an organisation which, while its work does not lend itself to picturesque description, is still filling a much-needed place in our present disturbed social conditions. The expenditure is now at the rate of £430 per week, and unless a sum of £25,000 can be raised in the next few months the work cannot be continued. It must be reiterated that no other body is doing exactly the same kind of work in trying by co-ordination of existing benevolent funds, as well as by their own specialised forms of assistance, to tide over the professional classes who are so nearly penalised by the war.

The offices of the Council are 13 and 14 Prince's Gate, S.W.

COMPETITION NEWS.

ROSYTH.—The Scottish National Housing Co., Ltd., recently invited sketch plans for artisans' houses to be erected at Rosyth. Messrs. Greig & Fairbairn, architects, Edinburgh, have now been instructed by the promoters to proceed with the scheme for the first lot of 150 houses which are to be commenced as soon as possible.

STEPNEY.—The assessor's report on the competition for the proposed municipal buildings will, it is expected, be considered to-day (Friday) by the Borough Council. An exhibition of the designs will be held at the Whitechapel Art Gallery, No. 81 Whitechapel High Street, E., from Tuesday, the 29th inst., to Friday, the 2nd proximo, between the hours of 2 P.M. and 8 P.M.

WHITEHAVEN.—The Town Council have made the award on the competitive designs for the laying out of the Coach Road site (6a. 1r. 25p.) within the borough and the erection of houses thereon. The prize-winners are as follows: First, 30 guineas, Mr. J. S. Stout, of Whitehaven; second, 20 guineas, Mr. H. Lord, 42 Deansgate, Manchester; and third, 10 guineas, Messrs. Unwin & Holland, of Wigan.

ILLUSTRATIONS.

HOUSE AT CAMPDEN HILL, KENSINGTON, W.

THIS house was built last year for Mr. Louis Meinertzhagen on the site of Blundell House.

The building is carried out in Collyer's sand-faced bricks, and the woodwork throughout is in oak. The roof is covered with Collyweston stone slates, the work being done by Messrs. W. Close & Son, of Collyweston, near Stamford.

Messrs. G. Parker & Sons, of Peckham, were the general contractors. Among the sub-contractors were Messrs. G. & A. Brown, of Chelsea, ceilings; Messrs. Weekes & Co., Victoria Street, Westminster, S.W., heating; Messrs. Wainwright & Warfng, Ltd., Point Pleasant, Wandsworth, S.W., metal casements; and Messrs. Dent & Hellyer, Ltd., 35 Red Lion Square, W.C., sanitary fittings. Mr. Arthur G. Leighton, F.R.I.B.A., was the architect.

LINCOLN ANGEL CHOIR.

THE angel choir at Lincoln Cathedral is an example of the Early English style at the moment when it reached its finest development; its height was fixed or restricted by the adjoining work of the previous period, the choir to the west. But upon this basis of height previously fixed (low as compared with great French cathedrals) the composition of each bay or each complete elevation of this angel choir expresses the perfection of relative proportion in its different features or component parts; and the art of the architect as illustrated herein is supremely elegant and refined. The effect does not depend upon quaint or uncommon forms, upon exaggerated and unrestrained aspirations and efforts; the conception is simple, and the adornment provided by the craftsman architect, or craftsmen, is superb in its applicability and beauty; it is restrained, but varied, ingenious, and expressive, and all foliation shows the true study of nature in its legitimate applicability in stone to adornment, while the grotesques or masks, being highly decorative, are happy and pleasing in the extreme, and were possibly local and topical. The whole is evidence of the work of great men of thoroughly trained and intellectual minds.

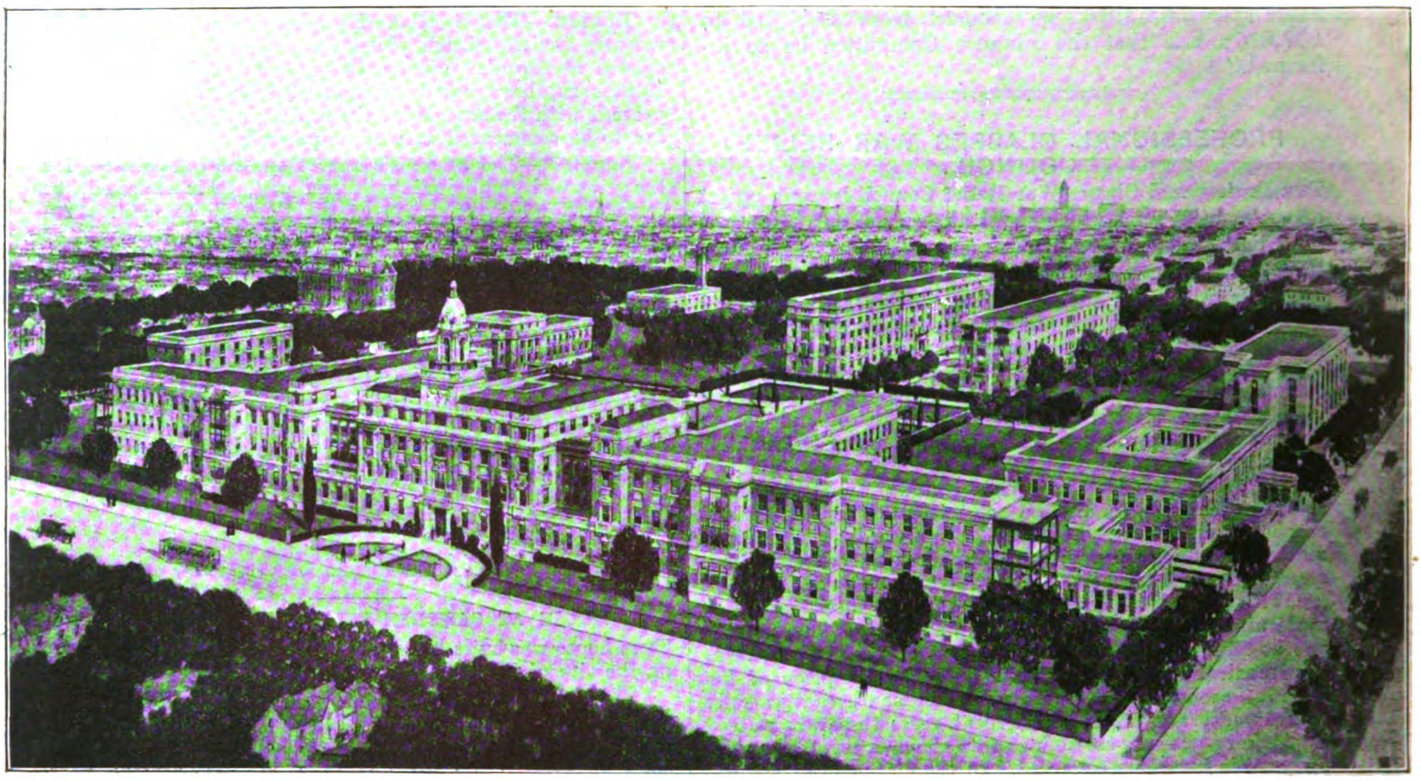
We can only humbly approach to learn as students, and to bow our heads in reverence before such a priceless work of the past.

The height from the present threshold flags to the top of the stone parapet is about 46 feet 3 inches, the width between the buttresses in this bay is 19 feet, and the buttresses are recessed or arcaded and 4 feet 5 inches wide on the face, and boldly project 7 feet 2½ inches from the main wall, the sides being doubly recessed to range with the front. These figures will serve to provide a scale for the drawing.

The wall of the chantry chapel on the easternmost buttress is not drawn.

The jointing is very instructive to the practical architect, and was evidently carefully considered, scientifically arranged, and set out beforehand, and apparently the stonework was worked before being fixed in considerable

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TORONTO GENERAL HOSPITAL.—BIRD'S-EYE PERSPECTIVE.
Messrs. DARLING & PEARSON, Architects. Mr. FRANK DARLING, F.R.I.B.A., Royal Gold Medallist.

quantities, for one observes the palpable fixing error to the east of the window, which continued up to a height of 10 feet at least before the opportunity arrived to adjust the same. This "slip" will prove various circumstances in connection with the method or rate of progress of the building works eastward, which can be left to the archæologists who have already so ably put before us the facts as to the history of the angel choir compiled from the ample historical records which exist.

In the winter of 1887 scaffolding was put up to repair some stonework, and the writer walked almost daily, from his home in the Fen, some miles along the banks of the slow-moving river Witham, high above which towers the great cathedral; and, warmed by the brisk walk and through the enthusiasm aroused by the gradual approach to his goal, he was able for several hours to endure the cold winds on the scaffolding and take full-size sections, complete sketches, and measurements of the whole of the external details of this bay, which were plotted to a half-inch scale drawing, of which the illustration is a reduced copy.

LLOYDS BANK, BRADFORD.

THIS is an example of the work of Mr. Sydney D. Kitson, F.R.I.B.A., in the treatment of banking premises, of which other illustrations have already appeared in *The Architect*.

14 UPPER GROSVENOR STREET.

WE illustrate the detail of this building as a specimen of the secular architecture of Mr. W. D. Caröe, F.R.I.B.A., whose work is not restricted to ecclesiastical buildings.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE final ordinary general meeting of the 1914-15 session of the Royal Institute was held at Conduit Street, W., on Monday last, June 21. Mr. Ernest Newton, A.R.A. (President), occupied the chair. There was a large audience of distinguished architects and guests, together with numerous ladies. The official representatives of the Overseas Dominions included Sir George Perley (Acting High Commissioner for the Dominion of Canada), Hon. W. P. Schreiner (High Commissioner for the Union of South Africa), and Hon. W. T. Mackenzie (High Commissioner for the Dominion of New Zealand). Among the others present were Sir Aston Webb, Mr. Frank Dicksee, Mr. Reginald Blomfield, Sir T. Holderness, Sir Ernest George, Mr. D. Macmaster, M.P., Professor Selwyn Image, Sir T. G. Jackson, and Mr. Basil Champneys.

Mr. E. Guy Dawber, the Hon. Secretary, said he regretted to have to announce the decease of Mr. John Macvicar Anderson, Past President. Mr. Anderson was eighty years of age, and had been a member of the Institute for over fifty-one years He was elected Associate in 1864, Fellow in 1868, and until the last few years had taken a prominent part in the various activities of the Institute. He had served on various Committees and on the Board of Examiners, had held the office of Hon. Secretary during the eight years 1881 to 1889, was Vice-President from 1889 to 1891, and President from 1891 to 1894. He was a steadfast supporter of the education and examination movement promoted by the Institute, and in association with Sir Aston Webb had given a generous sum of money, known as the Anderson-Webb Trust Fund, to be devoted to educational purposes. The Institute is indebted to Mr. Anderson for designing the alterations to its premises some twenty-five years ago, when the Council room and offices and the library rooms upstairs were given their present shape.

The following resolution was then passed by the meeting standing:—

"That the Institute do record on the minutes of this meeting its grateful appreciation of the services rendered to the Institute by its late esteemed Fellow and Past President, John Macvicar Anderson, and an expression of deep regret at the loss it has suffered by his death, and that a message of sympathy and condolence be conveyed on behalf of the Institute to his bereaved widow and family."

The Hon. Secretary said he had further to announce with very great regret the decease of the distinguished American architect, Dr. William Robert Ware, who had been a corresponding member of the Institute for thirty-five years. Dr. Ware had won distinction not only as an architect, but as a teacher of architecture. He was the designer of many important public buildings in the United States, and had held the position of Professor of Architecture first at the famous Massachusetts Institute of Technology and afterwards at Columbia University. The decease was also announced of Messrs. William Robert Osborne and Samuel Cooper Stephens, both Licentiates of the Institute.

Mr. Ernest Newton, A.R.A., President, then gave the following address:—

Ladies and Gentlemen,—We are met together to-night to present the Royal Gold Medal to Mr. Frank Darling.

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HOME FOR INCURABLES TORONTO.
Messrs. DARLING & PEARSON, Architects. Mr. FRANK DARLING, F.R.I.B.A., Royal Gold Medallist

Unfortunately, owing to circumstances over which we have not yet got quite complete control, Mr. Darling is not able to come from Canada to receive this medal in person, but Sir George Perley, the High Commissioner for Canada, has very kindly consented to represent him and will read the modest and appreciative message which Mr. Darling has cabled to us.

I have been at many of the meetings when the Gold Medal has been presented, and I remember that on these occasions the President's address was always brief and served merely to introduce the Gold Medallist, who is naturally the hero of the evening. I must, therefore, curb my well-known inclination to indulge in long speeches and addresses. I will not, then, weary you with the history of the Gold Medal or give you a list of the distinguished men to whom it has been awarded, although a perusal of the list is in itself an inspiration, and, taking almost any name, at hazard, it would not be difficult to give an account of one of the many art movements of modern times with which that name has been especially connected, but I can say, without fear of contradiction, that its bestowal is looked upon as the highest architectural honour that this country has it in its power to confer.

The Council of the Royal Institute examines very carefully the claims of the eminent men whose position would seem to entitle them to this distinction, and having made their selection they submit the name they propose to His Majesty for his approval.

The first medal was presented in 1848 to Mr. Charles Robert Cockerell, and the recipient last year was Monsieur Jean Louis Pascal. On this list will be found the names of distinguished men of many countries, but there is one thing that is new in connection with the presentation to-night, and that is, that for the first time in its history the Gold Medal is presented, by the unanimous vote of the Council and members of the Royal Institute of British Architects, and the approval of His Majesty, to a Canadian architect. I hope that in the future it may be presented to eminent men of the other great overseas dominions and Commonwealths.

Mr. Darling was born in Ontario in 1850 and had his first introduction to architecture in a Canadian office. At the age of twenty he came to England and worked under Mr. Street and Sir Arthur Blomfield. He began his career as an architect in Canada in 1875. His works are known to most of us only through the medium of drawings and photographs; some of us have had the privilege of seeing the actual buildings; I regret that I am not of the number. I have many times been tempted to visit Canada, but there has been between me and the sea a life-long antagonism. I have fought often, but have always been vanquished, and I have finally decided to accept defeat and not trust myself to its treacherous keeping.

On the walls are hung photographs of many of Mr. Darling's works. The following list will give you some idea of the amount of work which has passed through his hands:—

Toronto.—General Hospital, Canadian Pacific Railway Building, Royal Ontario Museum, Buildings for Toronto University, Bank of Nova Scotia, Dominion Bank Office, Union Bank Office, Standard Bank Office, many private houses.

Winnipeg.—General Post Office, Grain Exchange, Union Bank, Nova Scotia Bank, Imperial Bank.

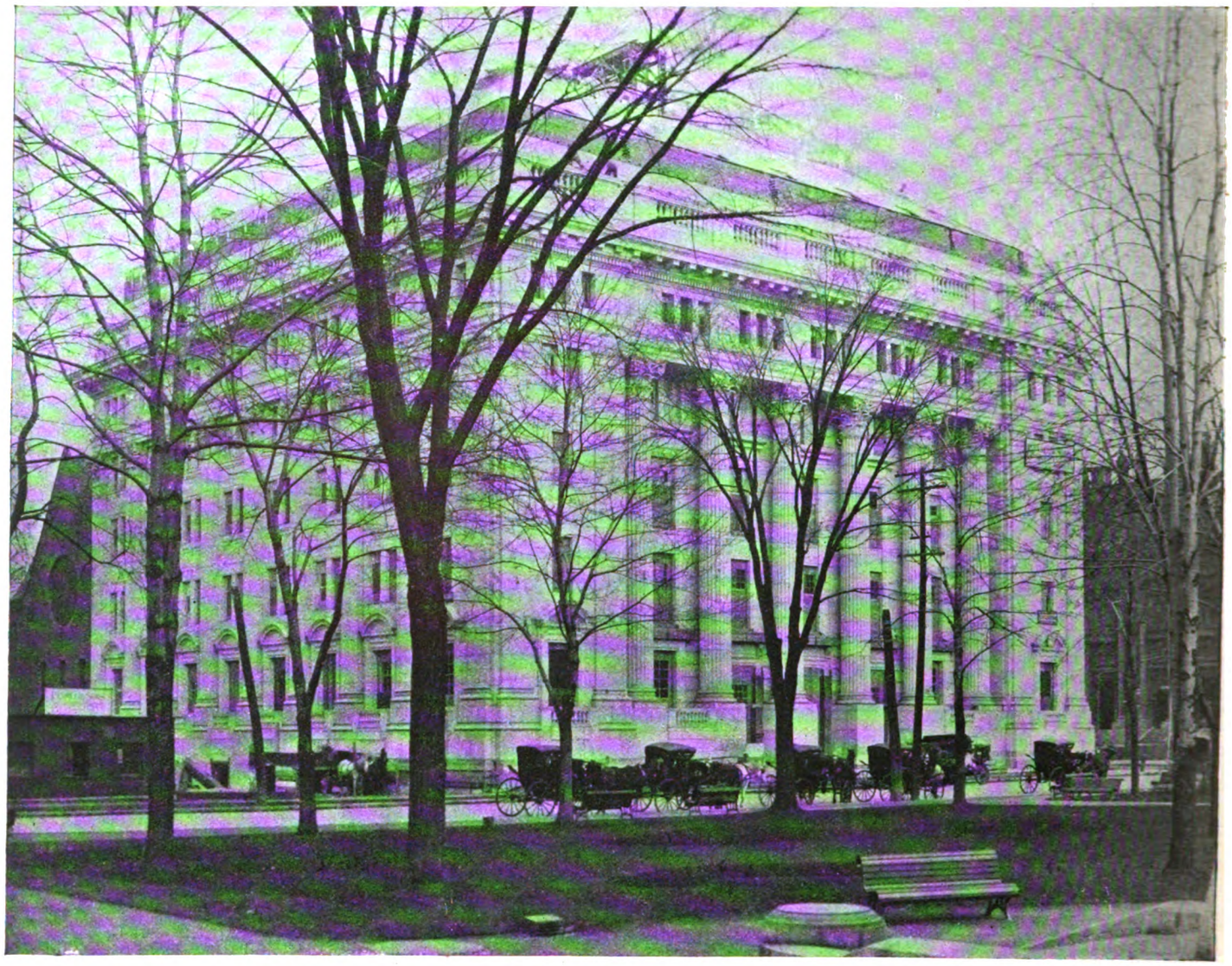
Montreal.—Sun Life Office.

He has also rebuilt an office for the Canadian Bank of Commerce in almost every important city in Canada.

Well, ladies and gentlemen, it is, I think, a peculiarly happy coincidence that we are here doing honour to a great Canadian artist, one of the leaders in the arts of peace, while his gallant fellow-countrymen on the battlefields of Europe are showing their magnificent qualities in the arts of war. We are only allowed glimpses now and then of the noble deeds performed by *all* the splendid troops of the Empire, but it seemed as if the history of the gallant stand of the Canadians on that memorable day, not many weeks ago, could not be held in the iron grip of the Censor, but *had* to be told.

You will, I hope, forgive me for talking about war rather than about architecture, but, try as we will, this war is so vast and so dominating, that it is impossible to speak on any subject without referring to it. It is, too, a war in which we are all so nearly concerned. The marvellous response to the call to arms is the most wonderful and inspiring page in the history of the Empire. We have had our volunteers before in hundreds and thousands, but

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SUN LIFE BUILDING (UNFINISHED), DOMINION SQUARE, MONTREAL.
Messrs. DARLING & PEARSON, Architects. Mr. FRANK DARLING, F.R.I.B.A., Royal Gold Medallist.

never in thousands and millions. Now we have the best of the whole manhood of the Empire, men of the Mother Country, of Canada, Australia, New Zealand, throwing aside all thoughts of material prospects to fight shoulder to shoulder for liberty and freedom. The Indian Empire has sent men and Indian princes have offered their services and contributed in countless other ways. South Africa, although engaged in fighting for the unity of the Empire in her own country, is yet anxious to find more men to help. Every rank, every trade and profession are represented. It is an amazing spectacle, but we are too near to it to realise fully its magnitude.

Need we, with all this evidence before us of courage and manliness, have any fear as to the future of our great Empire? Will not the memory of great deeds bravely performed bind us together and make us more and more determined to fight for the freedom of all peoples to develop what is best in them, in their own way, freed from the perpetual menace of a nation whose aim is the domination of the world, the destruction of the gentler side of human life, and the substitution, by force, of a desolating materialism?

Sir George Perley, in presenting this Medal to you as representing Mr. Frank Darling, will you, when the time comes for handing it to him, express to him our admiration for his work and our keen interest in the great Dominion which counts him as one of her distinguished sons; and will you also tell him that in honouring him with this distinction we are also honoured by the addition of his name to our roll?

At the conclusion of his address Mr. Ernest Newton handed the Royal Gold Medal to Sir George Perley, the High Commissioner for the Dominion of Canada.

Sir George Perley then read the following cablegram from Mr. Frank Darling:—

"Gentlemen,—I was more than surprised when your Secretary's letter arrived informing me that the Council of the R.I.B.A. had nominated me for the Royal Gold Medal for 1915. The bestowal of such a signal honour unlooked for and totally unexpected leaves me at a loss to express adequately my thanks and appreciation of the compliment paid me, and, through me, to the profession of which I am a member and to the country of which I am proud to be a citizen. I am a Canadian born and bred and an Imperialist from the bottom of my heart. I welcome everything that tends to bring more closely together the Mother Country and the great Dominions beyond the seas, and can think of nothing better calculated to help bring about in its own way such desirable results than this gracious action on the part of the Institute. That a body of such eminence as the R.I.B.A. should have singled out Canada as the first of the Overseas Dominions to receive the Gold Medal will, I know, be valued by the architects of this country as a very great honour paid to a profession not hitherto overburdened with public recognition, through striving manfully to uphold often against very adverse conditions the standing and dignity of the profession. As to myself, you value, I fear, too highly whatever I may have done in this direction. As for my architectural work, surrounded as you are by the masterpieces of our art, I have to thank you very cordially for the kind and lenient eyes with which you have looked upon it. You do me, gentlemen, far too much honour. I wish very much I could have seen my way clear to have gone across and received the medal in person. In not doing so I trust you will acquit me of any discourtesy, but as you all know only too well things are not normal and the world

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BANK OF NOVA SCOTIA, JAMAICA

Messrs. DARLING & PEARSON, Architects. Mr. FRANK DARLING, F.R.I.B.A., Royal Gold Medallist.

is out of gear, and I find it quite impossible to manage it. Again I have to thank you for your kindness in electing me a Fellow of the Institute, an honour I deeply appreciate and highly value. To be a member of the Institute is a distinction I have long coveted.—Yours very faithfully,

"FRANK DARLING."

Sir George Perley then went on to say that it was a great pleasure and honour for him to receive that evening the Royal Gold Medal which on the recommendation of the Royal Institute has been given to Mr. Frank Darling, and through him an honour has been given to the whole of the Dominion of Canada. He regretted exceedingly that Mr. Darling could not be in that room because those present would like him, and he would have been delighted to receive the medal at their hands. Mr. Darling, he might mention, had not been in the most robust health for several years, so his not being present was probably largely due to that reason. Mr. Newton had just told them about the achievements of Mr. Frank Darling, and the photographs on the walls showed conclusively the good work he has done. As representing Mr. Darling it was not for him to speak of his life and of his work; but he might be permitted to say that Mr. Darling has for years been known throughout Canada as one of their most eminent architects, and he believed him to be worthy of the great honour just bestowed upon him as being one who, in the words of the rules, "has designed or executed a building of high merit." Indeed, one might go further and say that some of his work has been more than brilliant. Ottawa was the seat of the Canadian Government, and it was where the Parliamentary buildings are and where their sessions take place every year. Across the Ottawa river is the manufacturing city of Hull. It had been for years the wish of the speaker and the wish of others loving Ottawa that there should be a well-considered plan to work to in the development of this federal district. The Dominion Government appointed a small commission to prepare such a plan of these two cities and their surroundings which they hope will be worthy of the capital of the great Dominion of Canada. This plan would be used for improvements to, and the beautifying of, the city as it grows, and so prevent difficulties which arise in every city where there is no such plan. Two years ago at the request of his Prime Minister he (Sir George Perley) undertook to arrange for this very small commission, and it was his privilege to offer a place on it to Mr. Frank Darling as representing the profession of architecture. English opinion of Mr. Darling's ability was thus shared by those in his home who knew him best. The present occasion marked, he was informed, the first time the signal honour of the Royal Gold Medal had gone to an architect of the Overseas Dominions. He said advisedly it was a signal honour to receive a medal from a society which was the oldest and most influential of its kind of any in the world. He appreciated that as a recognition of the art of architecture as practised in the Overseas Dominions, and he hoped he might be allowed to couple all those Dominions in that feeling. He believed the Institute had chosen a proper person to receive the Gold Medal, for he knew Mr. Darling had worthily upheld the dignity of the profession.

Mr. Reginald Blomfield, R.A. (Past President), in moving a vote of thanks to Sir George Perley, said they would have liked to renew acquaintance with their old friend Mr. Frank Darling, who had been a pupil of Edmund Street and Sir Arthur Blomfield (the speaker's uncle). The Institute enjoyed a great honour in having Sir George Perley with them that night; his personal qualities were perfectly well known, his ability and force of character had brought him into the very distinguished position whch he now occupies. From his address one gathered that Sir George had himself taken an active part in the promotion of that art they were interested in. The Institute welcomed him both for himself and as the representative of a great Dominion across the seas. They had all recognised for many years in the Canadian people an extraordinary capacity and force of character, an ability to seize the essential point, their amazing progress, their courage, and readiness to learn. An example of that was in the town planning of Ottawa, about which they had just heard, and in the recent competition for the new Parliament Houses. In the latter the Canadian Government showed their search for big ideals by throwing the competition open to all British subjects. There were great possibilities in front of Canada. But he felt that at this moment there were sterner issues in front of the race, and the arts must fall into the background. As citizens of the British Empire they all stood face to face with the greatest peril to their race. In the present terrible time they had learnt to know themselves and to know each other. There had been nothing finer than the response of the children to the needs of the Mother Country, than the rally of Canada, Australia, South Africa, India, and every quarter of the globe where the Union Jack flies. Remember the Canadians at Neuve Chapelle and the work of the Australians and New Zealanders in the Mediterranean! Those were the things which will bind the race together for eternity, and they would never forget they stood shoulder to shoulder in the crisis of their fortunes. If the majority of the population of Canada were their immediate kinsmen by blood, the others were from the splendid French race. The presentation of the Royal Gold Medal was not only a recognition of the admirable quality of Mr. Frank Darling's work, it was also a symbol of the union of the Empire. Mr. Darling was the first of the

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IMPERIAL BANK OF CANADA, WINNIPEG.
Messrs. DARLING & PEARSON, Architects. Mr. FRANK DARLING, F.R.I.B.A., Royal Gold Medallist.

architects from across the seas to receive that medal. But there would be many more to receive it in years to come.

The Hon. W. P. Schreiner (High Commissioner for South Africa), in seconding the vote of thanks, said the other High Commissioners and himself were glad to have Sir George Perley as a colleague in London. They were all brought very much closer together by the present crisis, for there were many ways in which they were able to help each other. The Empire will only be strengthened and brought closer together, the bonds made more tight because of trouble and adversity. In South Africa the fighting had been rather a question of endurance, for our men had to be content on

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UNION BANK OF CANADA (HEAD OFFICE), TORONTO.
Messrs. DARLING & PEARSON, Architects. Mr. FRANK DARLING, F.R.I.B.A., Royal Gold Medallist.

a diet of fly and bully beef—when they could get it. He believed more brilliant news would come within the next two or three weeks. There was certainly a large German force unaccounted for. He was glad to have been present that night. They in South Africa would be as proud of the honour paid to Mr. Darling as if he had been a South African. They were grateful for it; gratitude being a lively sense of favours to come. The art which the Royal Institute represented in this country was one eminently necessary for young countries. Surely it was far more important there than in the old countries where already there is so much beauty. In South Africa there were architects who deserve the highest encomiums. He hoped the presentation just made would be the forerunner of other occasions where men of the Empire will show themselves nearly as good, if not quite as good, as men of the Home Country.

The vote of thanks was then passed by acclamation.

Sir George Perley, in replying, mentioned that fifteen hundred of the members of the Royal Institute were with the Colours. The Empire was doing its best everywhere. In Ottawa they hoped to have before long some splendid additions to the Parliament buildings. The Dominion Government were determined to have new buildings which will be as fine as those they have at present. It was true

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that they of the Overseas Dominions are interested in developing their resources and are unable to give as much time to the art of architecture as they hope to be able to do in the future. Nevertheless they in Canada did not forget altogether other and higher things. For instance, they enjoyed a splendid system of education, and schools and colleges of the best. When he was travelling in the North-West one of the things which struck him was that the people there think of the education of their children from the very beginning. The result of teaching the children the higher things was shown conclusively in this war by the Dominions overseas coming forward to do their share. As part of the British Empire they were in the war because the Mother Country had been attacked and it was therefore their battle too. They were sending the best men they had for the purpose of handing down to their children the rights and liberties which are the heritage of the Anglo-Saxons. They had no love for German militarism, nor did they want to come under that authority. All sections of the Empire had done well. It seemed most appropriate that the Royal Gold Medal should go to the Overseas Dominions at the present time. They were all becoming a closer family than anyone would have anticipated. Out of this war good will come, for the Kaiser has helped to consolidate the British Empire.

NATIONAL PHYSICAL LABORATORY.

THE report for the year 1914-15 of the National Physical Laboratory shows the many activities which prevail at Bushey House, Teddington. The work of the Laboratory, like everything else in this country, has been, of course, greatly affected by the war. Some 25 per cent. of the staff have joined the Colours, and a reorganisation of the work has been required in practically all divisions.

Dr. T. E. Stanton's report on the Engineering Department contains an interesting record of useful work, and deals with a number of researches.

The Strength of Reinforced Floors and Columns.—Sir John Cowan, of Messrs. Redpath, Brown & Co., has entrusted the Laboratory with the design and erection of a machine for testing large slabs of reinforced concrete, beams, and other members employed in concrete construction, and the Executive Committee hope that the tests to be made with this machine, when erected, will prove of real value to engineers. The design of the machine, which is of an entirely novel character, has now been completed by Mr. Hyde, acting in conjunction with Mr. J. R. Sharman, consulting engineer to Sir John Cowan, and the work of construction has been put in hand. The maximum pressure of the machine will be fifty tons, and it is proposed to use for it the existing accumulator supply of one ton per square inch. Provision is made for testing floors 16 feet by 6 feet, and columns up to 14 feet high. A special gantry will be constructed, so that the floors and columns can be lifted from the position in which they are made and carried directly to their position on the testing machine. It is proposed to pay particular attention to the method of determining the nature and magnitude of the end constraint in the case of columns under compression tests, and it is hoped to achieve this result by means of a compound knife-edge system which has already been applied to the case of steel columns of small dimensions tested in the existing machine. The design of the deflection-measuring gear for the floors under test will, it is anticipated, require considerable attention. The construction of these appliances, together with that of the weigh-beam of the machine, has been undertaken in the engineering workshop. It is hoped that the machine will be completed in the autumn of the present year.

The Prediction of the Wind Pressure on Structures (Dr. Stanton).—The experiments on the high-level girders of the Tower Bridge have been continued during the year, but unfortunately no opportunity has arisen of obtaining a record of a wind of storm force normal to the bridge. Some valuable records have, however, been obtained, which illustrate the variable degree of irregularity in wind pressure. On January 16, 1915, with a north-west wind of from thirty to forty miles per hour, a record was taken, in which the lateral variation across the 225 feet of the girder was almost inappreciable, the indicated fluctuations of pressure at the reference point near the centre of the bridge being reproduced in the trace of average pressure on the bridge much more regularly than has hitherto been supposed to be the case even in moderately steady winds. If such conditions should recur in winds of storm force, previous conclusions as to the magnitude of the wind-structure factor in the maximum wind pressure to be allowed for in the design of structures might have to be modified. For this reason it has been decided not to dismantle the apparatus for the present, in the hope that some records may be eventually obtained with winds of storm force.

Testing of Roads and Road Materials.—If the sanction of the Road Board is obtained, it is proposed to put down a complete mixing plant for the production of asphalte carpets to be tested by the road machine. This will involve the erection of a sand drier, boilers for the heating of the bitumen, flux, and fluxed bitumen, and a batch mixer, together with all the necessary driving and weighing appliances. Some modifications will also be made in the existing mechanism for causing axial motion of the test wheels in order, if possible, to diminish the production of "ruts" in the track.

The Measurement of the Rate of Growth of Cracks in the Building of the Tower of London.—At the suggestion of the principal architect in charge of the Royal Palaces, and with the approval of the Office of Works, it is proposed to commence a systematic study of the cracks in the buildings of the Tower of London. For this purpose cracks suitable for observational purposes have been chosen in the walls of St. John's Chapel, and in the Beauchamp, Salt, Wakefield, and Cradle Towers, and a set of crack micrometers of Mr. Horace Darwin's design has been put in hand. When these are fitted, observations will be made weekly for a period of twelve months. Temperature records will be taken concurrently, in order to eliminate the effect of movements due to change of temperature.

ARTERIAL ROADS IN GREATER LONDON.

A SUB-COMMITTEE of the Southern Sectional Conference on Arterial Roads in Greater London has reported as follows:—

1.—SUTTON BY-PASS AND MERTON CONNECTION.

Merton Connection.—The Merton and Morden representatives approve the line of the road proposed by the London Traffic Branch of the Board of Trade, from Morden Hall to Rose Hill within their district, to connect Merton Road with Sutton, and the Sub-Committee recommend that it be constructed.

Sutton By-pass.—The Sutton Urban District Council prefer that the proposed by-pass should go to the west of Sutton rather than to the east, as had been proposed by the Carshalton Urban District Council. The points put forward by their Surveyor in favour of the western route are that more of it is within the Sutton boundary, that the gradients would be considerably better, that the length would only be 3.478 miles, as against 5.143. It is also proposed that the western by-pass would be 60 feet wide whereas the eastern by-pass was to be only 50 feet wide. Again, part of the western route is occupied by land already belonging to the Sutton Council and other owners are agreeable to make accommodation for the proposed road. In the opinion of the Sub-Committee, a by-pass on the west of Sutton would be the easier to construct, and either line on this side affords better grades than that on the east, and they recommend, therefore, that the by-pass be constructed on the west. On the other hand, the eastern by-pass can be incorporated in the Carshalton Town Planning Scheme, as it would help estate development, and would form a very useful road in addition to that proposed by the Sutton Council.

2.—EPSOM BY-PASS.

The local representatives are strongly in favour of widening the High Street, rather than arranging for the proposed by-pass. They object to the by-pass on the score that it would cross an open space recently presented to the town by Lord Rosebery, and they hold the view that it would divert business from the High Street. In the opinion of the Sub-Committee, the proper method of treatment would be by means of the by-pass. The local authority are anxious that East Street, the road to the north of the railway, should be widened now before old property is replaced by more important buildings, and the Sub-Committee agree that this is also desirable.

3.—CROYDON BY-PASS.

The by-pass, as at present proposed by the Croydon Corporation, rejoins the main road at a point where con-

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siderable congestion of traffic already exists, and the Sub-Committee are of opinion that the mere widening of Russell Hill Road is not sufficient, and that the new road should be extended beyond this point to rejoin the main road clear of this congested crossing. Similarly, at the northern entrance the Sub-Committee consider that the proposed widening of a portion of Thornton Lane does not provide a satisfactory approach to the by-pass, and that a new road should be constructed in continuation of Thornton Road to join the London Road, opposite the junction of Winterbourne Road. The Sub-Committee further consider that the 60 feet width proposed for this important road is inadequate for the requirements of traffic in the near future, and they recommend that the Croydon Borough Council should make use of the Town Planning Act to fix building lines set well back from the new road.

4.—SOUTH CIRCULAR ROAD.

The portion of this route, proposed by the London Traffic Branch of the Board of Trade, in the Southern Section, extends from Lordship Lane Station to Clapham Common. The Investigation Committee were informed that the whole of the land lying south of Dulwich Common, by Lordship Lane Station, forms part of the Dulwich College Estate, and that it is proposed to lay it out for building. Under these circumstances the Sub-Committee think that, although the widening of Dulwich Common and the improvement of the turning into Lordship Lane might answer for present purposes, it would be an advantage if in laying out the estate provision were made for the new and more direct road across the open ground. The route approved by the Sub-Committee for that portion of the proposed South Circular Road, from Lordship Lane Station to Clapham Common, in the Southern Section, is as follows:—From Lordship Lane Station Railway Bridge it should cut across the Dulwich College building estate to Dulwich Common and on by Thurlow Park Road to Tulse Hill Station, where a cut should be made to Christchurch Road, whence the route would follow Christchurch Road, Streatham Place, Poynders Road, and Cavendish Road to Clapham Common.

(5) The Sub-Committee draw particular attention to the urgency of at once fixing the lines of the approved routes for the South Circular Road, the Sutton By-pass and the Merton extension, as a great deal of open land is now available that will get quickly built up and the routes blocked unless fixed by means of Town Planning Schemes or otherwise.

(6) The Sub-Committee recommend that 25-inch plans of the routes when approved by the S. Sectional Conference should be prepared and signed by the Chairman for submission to the Main Conference and that they should afterwards be kept at the Local Government Board as a record. From time to time enlarged scale details might be added and signed by the Chairman.

(7) The Sub-Committee recommend that a report be drafted by the Main Conference setting out the chief routes so far approved, the principles advocated, and the further procedure that is proposed under present conditions.

(8) The Sub-Committee ask to be re-appointed with a view to considering the best means of carrying out the approved routes and to keep in touch with and encourage co-operation between Local Authorities with regard to road proposals and Town Planning Schemes.

(9) The Sub-Committee wish to draw the attention of the Sectional Conference to the desirability of preparing estimates as soon as possible so that (*a*) the probable cost of the respective improvements may be available, (*b*) in the event of unemployment following the war, or otherwise, information as to a useful outlet for labour will be readily available.

(10) The Sub-Committee are of opinion that powers should be given to County and County Borough Councils, after consultation with the Local Authority concerned, to prescribe building lines to existing roads, subject to an appeal to the Local Government Board.

CHESTERFIELD Corporation are about to embark upon extensions of plant at their electricity works, involving an outlay of about £5,000. Tenders totalling £2,706 have been accepted in part execution of the scheme as follows:—400 K.W. alternator, &c., British Westinghouse Co., £877 10*s.*; boiler, £997; super-heater, £195; mechanical stoker, £280—Messrs. Babcock, Wilcox & Co.; economiser, Clay Cross Co., £359.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

St. Bartholomew the Great.

SIR,—As Mr. J. Tavenor Perry in his article in your issue of June 11 says that he still holds the opinion that the choir of this church was "from the very first square ended in the usual English fashion," may I be allowed to point out that the Norman apsidal end was the fashion in England from the time of the Conquest until after St. Bartholomew's was founded in 1123, and that the commencement of the curve of the original Norman apse still remains at St. Bartholomew's in the first and second and in the sixth and ninth bays of the ground arcade, and in the first and seventh of the triforium? It is therefore most unlikely that the apse was left incomplete by the omission of the three central bays.

It is also not quite exact to say that the architects were working in the dark until the square east wall was removed, because the piers between the second and third bays, and the one between the fifth and sixth bays were still visible though built into the walls of "Purgatory." These piers showed the continuance of the curve of the apse.

Then, again, Mr. Tavenor Perry speaks of this "massive wall standing a litle to the east of the chord" as being of uncertain date, but the date of that wall is well known, for the shafts of the jambs of the two windows in the upper portion were visible in 1863 as they are now, and indicates clearly a date of the first ten years of the fifteenth century, which date is confirmed both by the tracery of the window found subsequently (to which Mr. Tavenor Perry refers), and by the record of the "Regesta" at Rome of 1409, which tells of the rebuilding of the high altar by the then prior. In converting the apsidal end of St. Bartholomew's to a square end the Canons were simply following the fashion set by other great churches such as Winchester, Gloucester, and many others.

The finding, as Mr. Tavenor Perry says, of many fragments of Norman carving in the square wall surely proves that Norman work had been pulled down for the building of the square fifteenth-century end. In fact, as I have had the pleasure of pointing out to Mr. Tavenor Perry, the original completion of the apse in the twelfth century was placed beyond doubt in 1886, when the moulded stones which formed the arches of the ground and triforium arcades were discovered in the upper part of the square wall. The central bay of the present triforium of the apse is, in fact, built of the actual stones of the original bay of the triforium. The stones of the lower arches can still be seen with other fragments in the north triforium of the church. These were not used again because the ground arcade was rebuilt twenty years before they were discovered. The fact of peat being discovered when excavating for the new columns may be accounted for in more ways than one.

Mr. Hayter Lewis and Mr. William Slater, having weighed the evidence very carefully as to whether the square or apsidal end should be restored, decided on the latter on the ground "that no remains of the Perpendicular work were of such importance as that of the Norman," but before any contract was entered into—viz., on June 19, 1864—a meeting of the leading architects of the day held in the church unanimously urged the reconstruction of the apse as "a point of prime importance." Among the architects present were Sir Gilbert Scott, R.A., G. E. Street, R.A., Benj. Ferrey, J. L. Pearson, and others.

As regards the lowering of the floor level in the sanctuary, opinions will probably always differ; but as regards that of the rest of the church (up to the west side of the crossing), as the levelling-up had been done in the sixteenth century only, and some twenty years after the suppression of the monastery, it was apparently the best thing to lower the floor to the original level.

That Roger (not Ralph) Walden built a chapel for his chantry as part of the present Rahere tomb is very probable; but eventually his chantry was founded at St. Paul's Cathedral where Walden was buried, and not at St. Bartholomew's.

As Mr. Tavenor Perry says, this work under discus-

(*Continued on page* 355.)

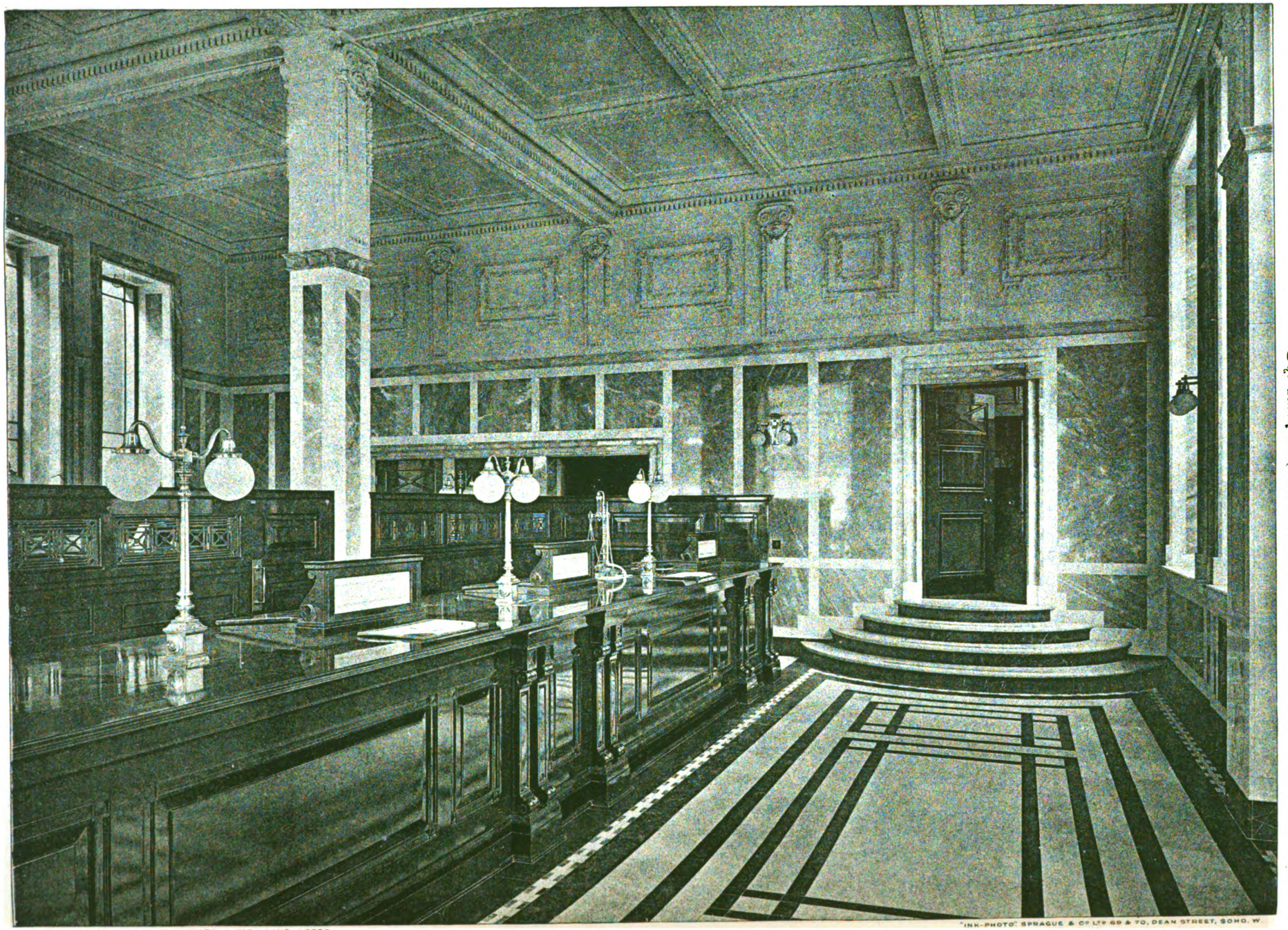
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These illustrations are in continuation of the examples of the exquisite

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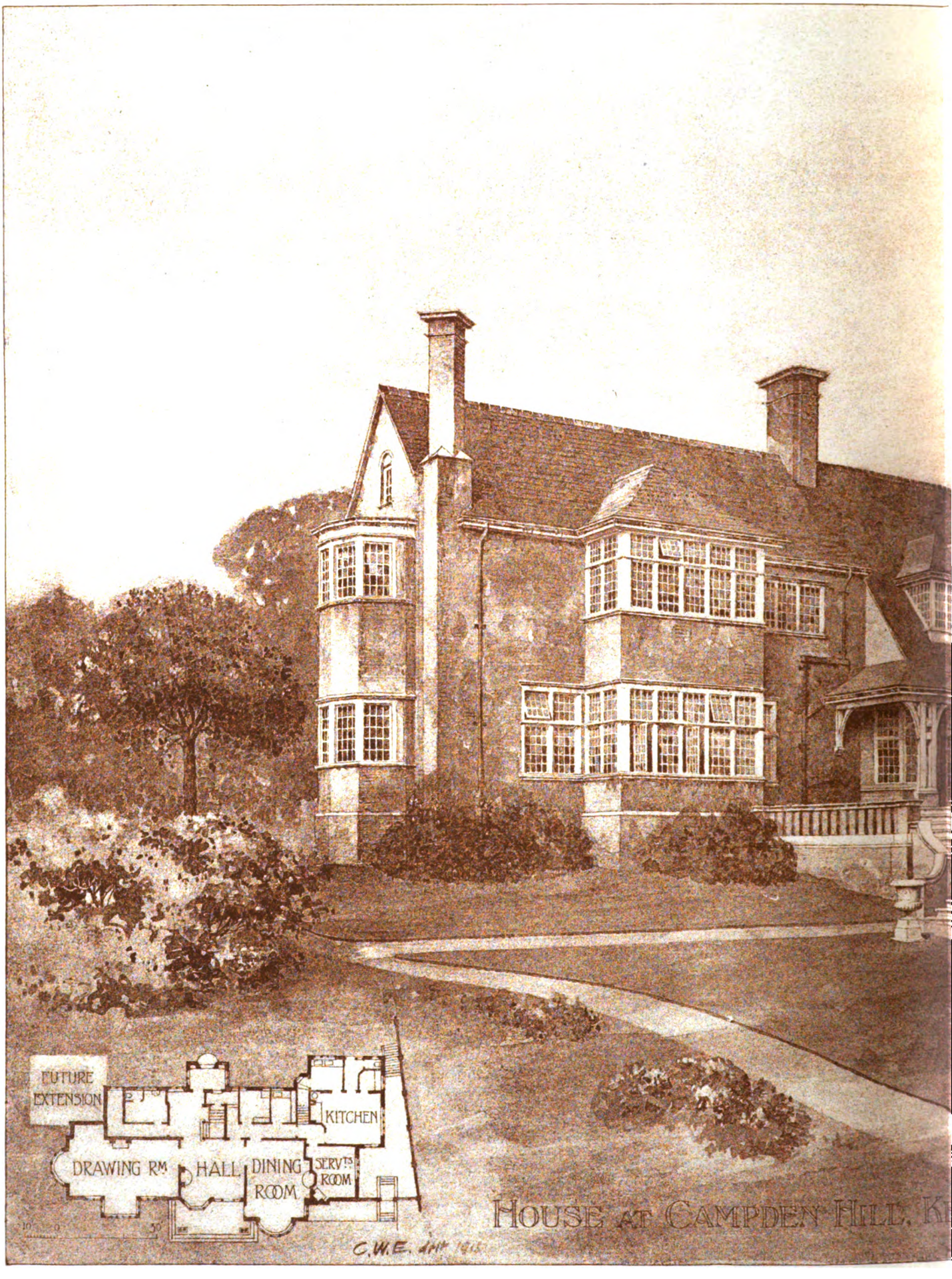
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LLOYDS BANK, BRADFORD.

Mr. SYDNEY D. KITSON, F.R.I.B.A., Architect

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HOUSE AT CAMPDEN HILL, K

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June 25th 1915



ENSINGTON, W. FOR LOUIS MEINERTZHAGEN, ESQ.

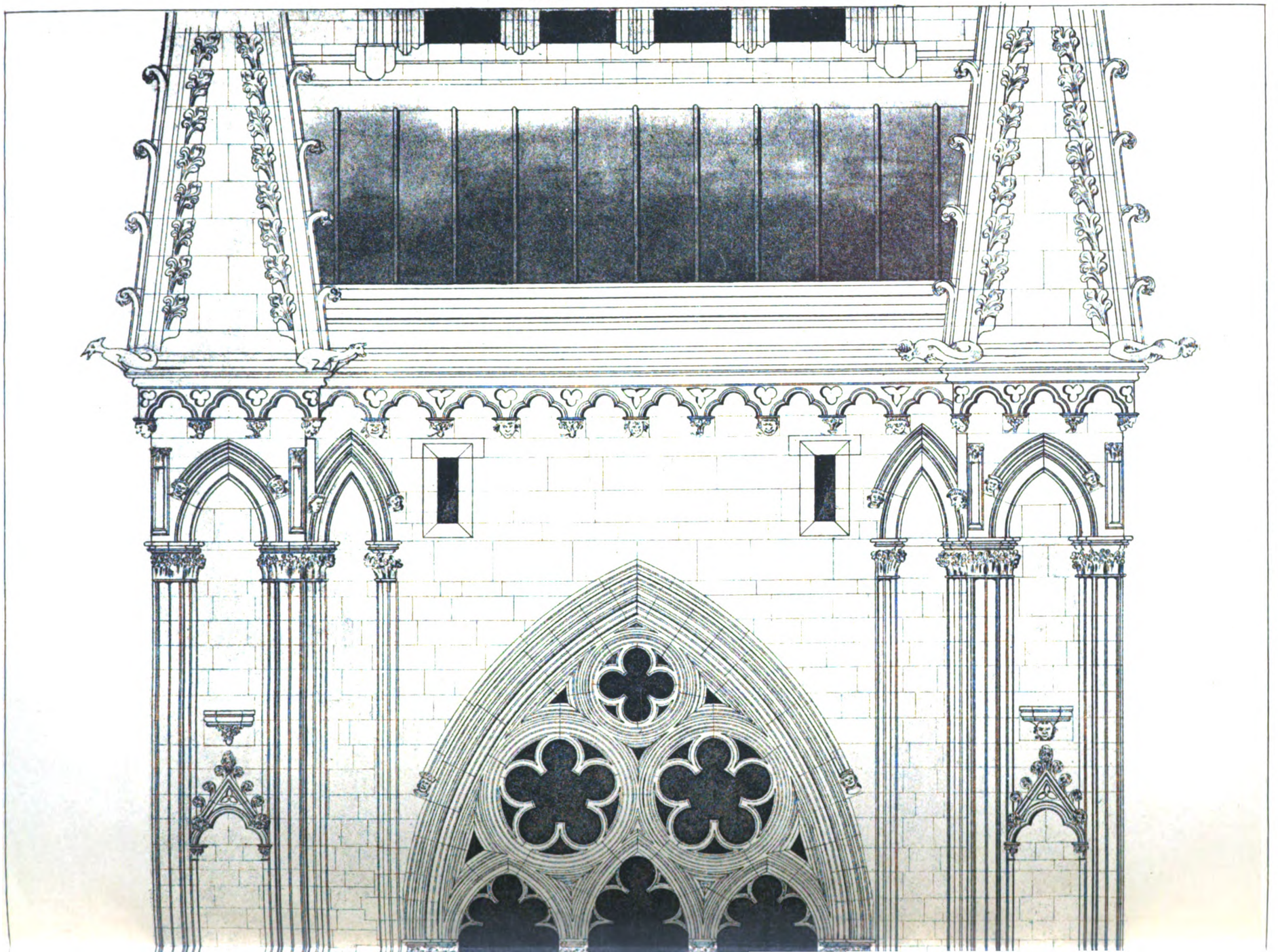
Arthur S. Leighton F.R.I.B.A. Architect.

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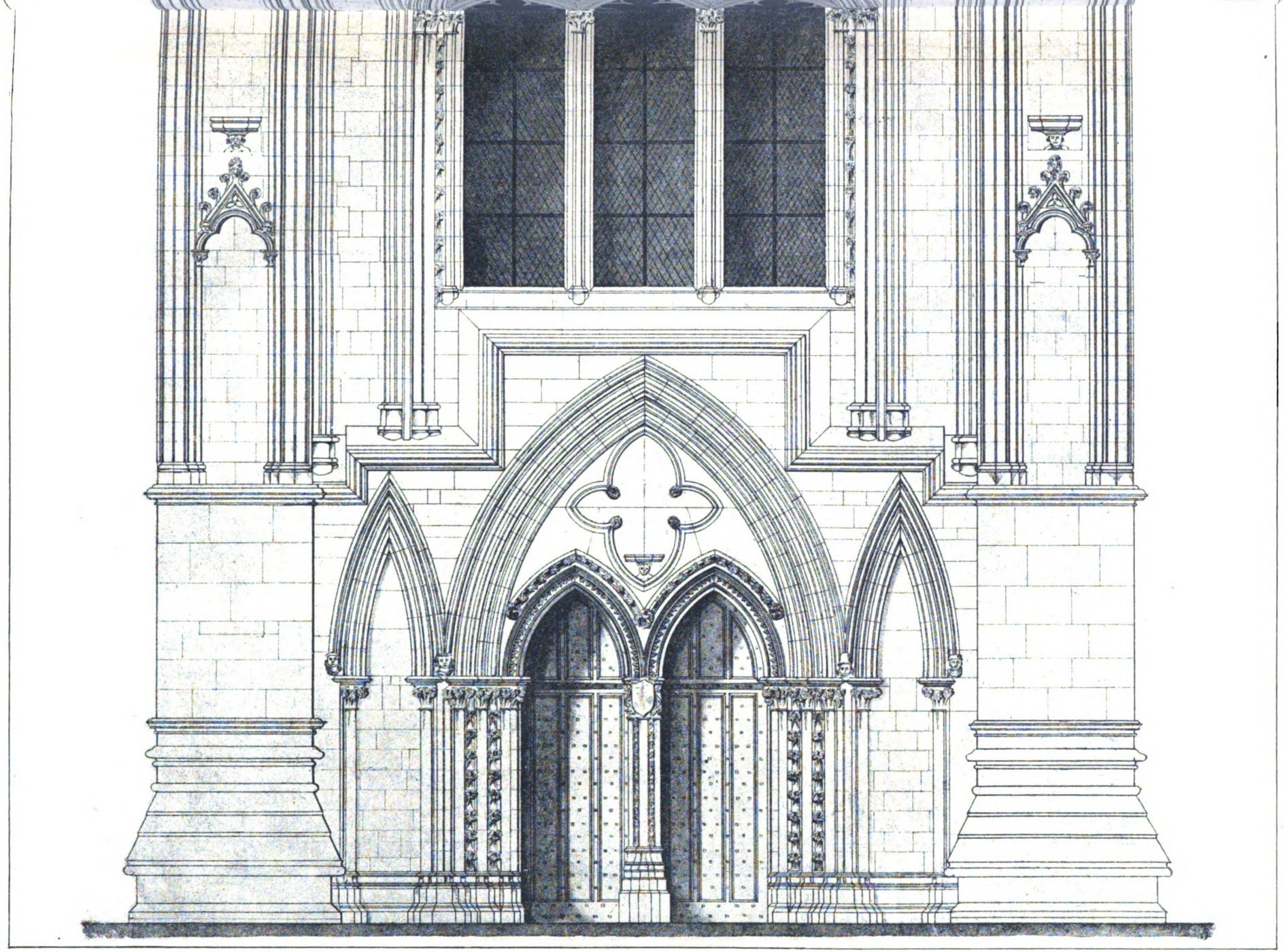
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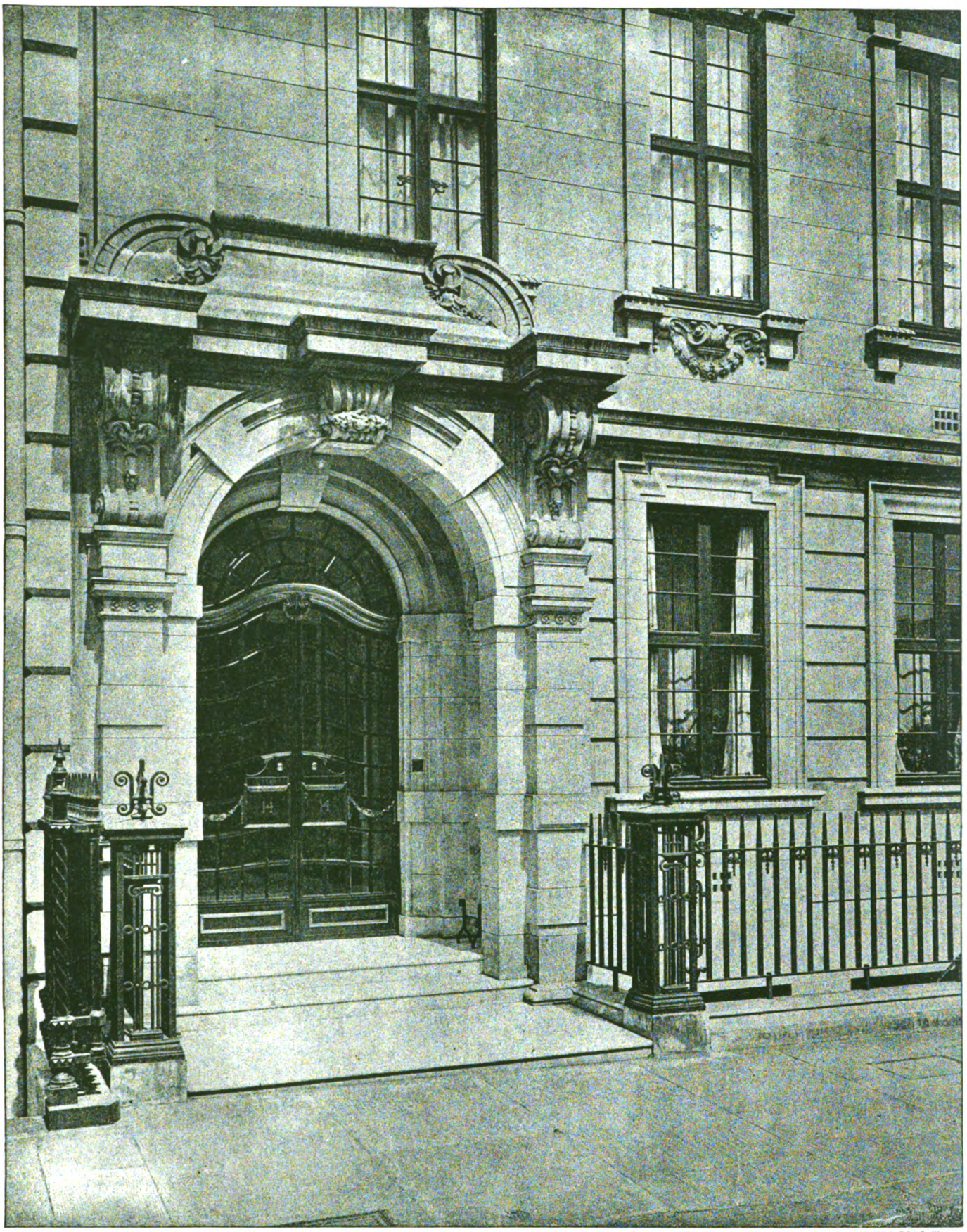
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LINCOLN CATHEDRAL: ANGEL CHOIR, ONE BAY AT NORTH DOOR.

Measured and Drawn by Mr. FRANK PECK, F.R.I.B.A.

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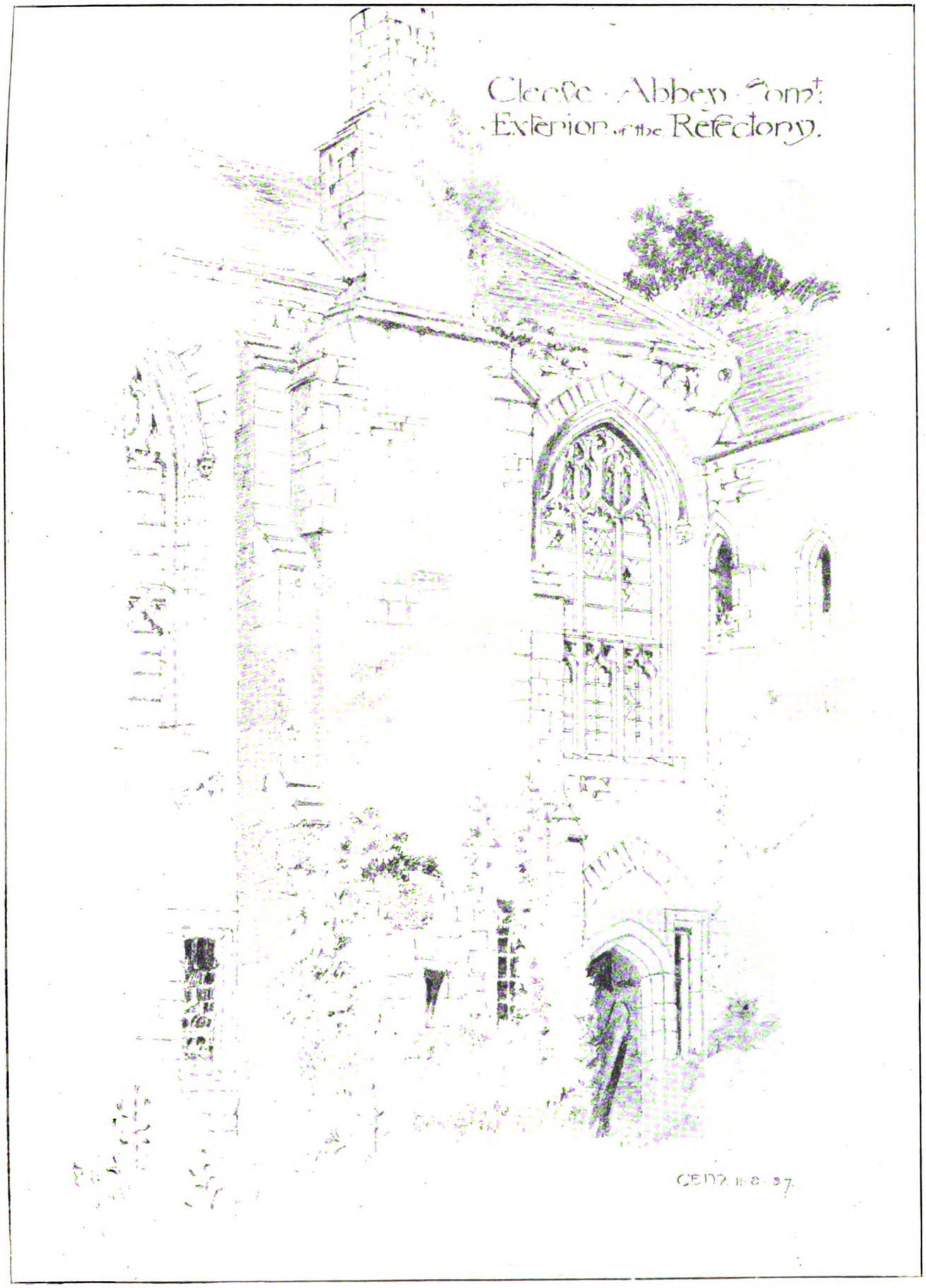
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14 Upper Grosvenor Street.

Mr. W. D. Caröe, F.R.I.B.A., Architect.

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draughtsmanship of the late Mr. C. E. Mallows which we gave last week.

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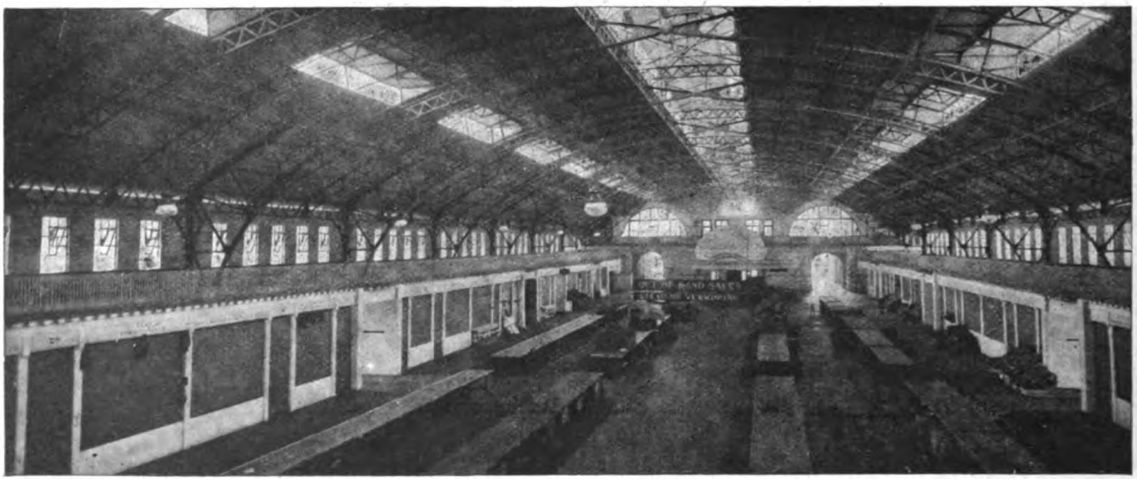
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sion was completed before the present Committee took up their work, and I need hardly say that I am obliged to Mr. Tavenor Perry for giving me this opportunity of explaining the evidence on which I believe the Committee of 1864 acted.—Yours, &c.,

E. A. WEBB,
Churchwarden.

The Vestry, St. Bartholomew the Great, E.C.:
June 22, 1915.

The Urgent Demand for Fireproof Buildings and Sleeping Huts in Munition Centres.

SIR,—I observe, in the daily Press, notices under above heading. You may possibly recollect that you favoured me by publishing my letter in *The Architect*, February 8, 1907, "A New System for Building Houses, &c." This system is fire, water, and vermin proof, also most economical. The buildings can be quickly erected and can be inhabited without loss of time. There is no waiting for concrete to set and plaster to dry. All the materials have been tested successfully. Such buildings are sanitary and can be erected in any climate, are warm in winter and cool in summer, *vide* my above-mentioned letter. I should be pleased to give any further particulars if required.—Yours, &c.,

HENRY H. B. SANG,
Architecte-Decorateur.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 2,081. Jan. 26, 1914.—Dated under International Convention June 30, 1913. H. G. Proctor, 127 Queen Street, Woollahra, near Sydney, and Harry Walters, Prince of Wales Hotel, George Street, Sydney, N.S.W. Automatic self-closing sash fastener,

8,383. April 2, 1914.—Chas. Renaux, 31 rue du Repos, Paris. Locking mechanism.

11,668. May 12, 1914.—F. J. B. Mathie and Robert Farrow, 46A Market Street, Manchester. Vacuum-cleaning or dust-collecting device of the portable type.

12,045. May 15, 1914.—Andre Samuel, 9 rue de Bonnel, Lyons. Method of coating iron surfaces.

12,473. May 20, 1914.—A. C. Pilkington, "Briars Hey," Rainhill, Lancs. Apparatus for cutting sheets of glass.

12,742. May 23, 1914.—F. S. Beecroft, 12 Wood Street, E.C. Stair treads or nosings and floor and like surfaces.

13,725. June 6, 1914.—C. A. Ely, "Seaton," Albert Road, Wolverhampton. Ball-bearing hinges.

13,853. June 8, 1914.—H. C. Saich, 32 Bromley Road, Beckenham. Apparatus for heating and circulating water.

15,183. June 24, 1914.—A. R. P. Hickley, 113 London Road, Chelmsford, Essex. Construction of window-blind cord pulley.

16,464. July 10, 1914.—James Keith, A.M.I.C.E., M.I.M.E., and D. D. Bain, A.M.I.M.E., 27 Farringdon Avenue, E.C. Ventilating systems.

19,187. Aug. 28, 1914.—Robert Duncan, 36 Cock Lane, Snow Hill, E.C. Low-pressure circulating boiler.

19,496. Jan. 5, 1915.—W. D. Helps, 34 Wellington Street, Leeds, and Fred Watson, High Swartha, Silsden, Yorks. Double regulating valve.

825. Jan. 18, 1915.—Dated under International Convention June 8, 1914. H. J. Hick, 120 South Arch Avenue, Alliance, Stark, Ohio. Locks.

14,520. June 17, 1914.—John Wood, Garden Engineering Works, Ramsbottom, Lancs. Wall-paper printing or staining and such like machines.

14,657. June 18, 1914.—J. M. Tourtel, 52 Eaton Rise, Ealing, W. Seal locks.

15,283. June 26, 1914.—Alban Crofts, 21 Grenaby Road, Croydon, Surrey, and W. E. Harrison, Hope Works, Sherborne Street, Birmingham. Stop hinge.

12,094. May 16, 1914.—A. E. S. Woodhead, 153 Westminster Road, Sheffield. Construction of frame work or half-timbered structures.

12,183. May 18, 1914.—George Palmer, Mona House, Pembrey Road, Llanelly, Carmarthen. Corrugated ridge cap in any metal or plate for the purpose of ridging a corrugated roof.

12,246. May 18, 1914.—Dated under International Convention July 23, 1913. A. A. Miller, High Street, Northcote, Victoria, Australia. Construction of sheet iron for use more particularly for building purposes.

12,299. May 19, 1914.—Dated under International Convention May 20, 1913. George Desaulles, 4 Avenue Erlanger, Paris. Apparatus for the drying, kiln-drying, humidification, and like treatment of any materials or products in a state of division.

13,093. May 28, 1914.—T. E. Barralet, and the Parkinson Stone Company, Ltd., Stour Street, Spring Hill, Birmingham. Water heaters.

13,280. May 30, 1914.—Frederick Iles, Station Road, Studley, S.O. Warwick. Metallic wire for ornamental or decorative purposes.

13,693. June 5, 1914.—V. H. Stott, Vernon Works, Lee Street, Oldham, Lancs., and Lee Schofield. Water-heaters, geysers, and the like.

13,742. June 6, 1914.—John Shanks, Tubal Works, Barrhead, Renfrewshire. Outlet of water-closet basins.

16,382. July 9, 1914.—E. J. Rohrbacher, 701 East Pike Street, Seattle, Washington, U.S.A. Valves for pipe connections.

16,833. July 15, 1914.—The Lichtenfeld Burglar Alarm Company, Ltd., 53 New Broad Street, E.C., and Siegmund Lichtenfeld, 300 Regent Street, W. Control gear for electric burglar alarms.

17,629. May 21, 1914.—A. H. Moss, Myrtle Villa, Misterton, Gainsborough. Grinding or crushing machinery.

17,731. July 27, 1914.—T. O. Partridge, Saville Street, Gore Hill, North Sydney, N.S.W. Brick-making machines.

20,061.—Sept. 23, 1914.—C. W. Tonks, Enoch Tonks, and G. A. Tonks, Temple Works, Willenhall. Cylinder latches.

27,786. Dec. 3, 1913.—M. A. Holmes, 135 Beresford Road, Rusholme, Manchester. Glazing of roofs.

19,482. Sept. 5, 1914.—W. J. Ross, West Colorado Avenue, Telluride, San Miguel, Colorado, U.S. Window-sash fasteners.

12,867. May 25, 1914.—C. O. Bastian, 32 The Avenue, Brondesbury Park, N.W. Electric heaters.

12,929. May 26, 1914.—Ralph Johnston, 40 Dowling Street, Dunedin, N.Z. Pile shoe for wooden and concrete piles.

13,046. May 27, 1914.—Ronald Dudley, 120 Victoria Street, S.W. Construction of reinforced concrete walls, partitions, and the like.

13,167. May 28, 1914.—H. J. Rayner, 52A Bow Lane, E.C. Mechanical stippling pens for artists and the like.

14,905. June 23, 1914.—James McDougall, Mesty Croft, Wednesbury, Staffs. Droppers and standards for fences and the like.

15,370. June 26, 1914.—William Boby, Salisbury House, London Wall, E.C. Cleansing of filter beds.

16,047. July 6, 1914.—W. J. Brett, 1 Albany Road, Coventry. Flushing cisterns, water waste preventers, and the like.

16,099. Sept. 24, 1914.—Ernest Tutin, 113 Thompson Street West, Harrowgate Hill, Darlington. Hinges.

16,846. July 15, 1914 (dated under International Convention July 15, 1913).—Jules Faugeron and Henri Jouhanneaud, 6 rue Bobillot, Limoges (Haute Vienne), France. Machines for the manufacture of ceramic tiles and the like.

17,815. July 28, 1914.—James Murphy, 223 School Road, Crookes, Sheffield. Gully trap.

21,328. Oct. 21, 1914.—J. B. Baird, Avonmore, Pennsylvania, U.S.A. Floor tilings.

22,111. Nov. 6, 1914.—Mellowes & Co., Ltd., 40 Corporation Street, Sheffield, and A. E. Rasey, 105 Windmill Street, Gravesend. Syphoning device for flushing cisterns.

23,346. Dec. 1, 1914.—J. F. Wyatt, 178 Victoria Road, Torry, Aberdeen, and William Fiddes & Son, Ltd., Crombie Place, Aberdeen. Double end automatic dove-tailing machine.

23,638. Dec. 7, 1914.—N. E. Noble, Dalehurst, Humberston Drive, Leicester, and J. W. Goddard, North Evington, Leicester. Rotary cutter block suitable for planing machines.

795. Jan. 18, 1915.—H. S. Humphrey, Kalamazoo, Michigan, U.S.A. Instantaneous water heater casings.

5,997. March 21, 1914.—Fourness Manufacturing Co., Ltd., Pritchard Street, Charles Street, Manchester, and James Martin, 26 Manley Street, Higher Broughton, Manchester. Draw-off fittings for geysers or water heaters.

5,262. April 7, 1915.—S. R. Parkes, Pretoria Works, New Road, Willenhall. Handles for latches.

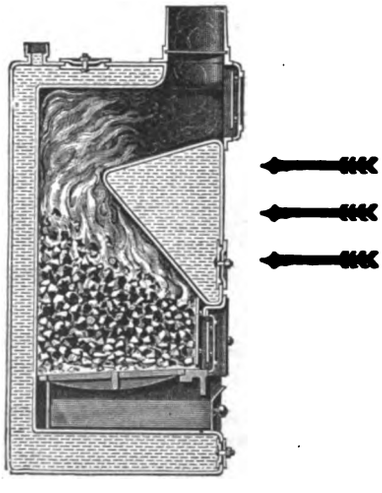
Any of the above specifications may be obtained from J. D. Roots & Co.

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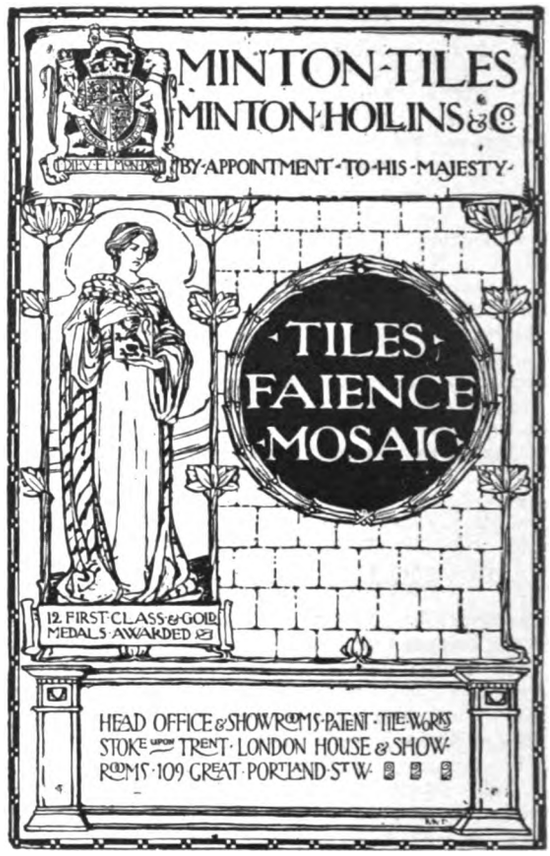
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BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Amersham.—Proposed isolation hospital.

Aylesbury.—Bakehouse, Oxford Road: additions, for Messrs. W. Andrews & Sons.

Gawcott (near).—Proposed infectious diseases hospital.

Grandborough.—House, for Mr. C. Rawlings (of Blackburn).

CUMBERLAND.

Aspatria.—Proposed Wesleyan Chapel.

DEVON.

Brixham.—Proposed isolation hospital.

DURHAM.

Durham.—Houses, Neville's Cross: alterations and improvements, for Mr. C. Garstein.

House, Western Nurseries, for Mr. J. Oliver.

Heighington.—Two houses, for Mr. A. Booth.

GLOUCESTERSHIRE.

West Dean.—Proposed Council school, for the Managers of the Forest of Dean group.

HAMPSHIRE.

Redbridge.—Works: extension, for Schultze, Ltd.

KENT.

Bexley.—Buildings for aeroplane parts, for Messrs. Vickers, Ltd.

Chatham.—Villas, Maidstone Road. Mr. E. S. Randall, architect, 174 High Street.

LANCASHIRE.

Bolton.—Houses, Stratford Avenue, for Messrs. Leigh Bros.

Eight houses, Green Lane. Mr. T. Woods, builder, 40 Eastbourne Grove.

Heysham.—Bungalow, Heysham Road. Mr. J. Crawshaw (of Bradford), architect.

Hindley.—No. 108 Atherton Road: alterations, for the Hindley Co-operative Society.

Nos. 117 and 119A Castle Hill Road: alterations, for Mr. T. Anderton.

Two villas, Hall Lane, for Messrs. W. & F. A. Jenkinson.

Radcliffe.—Proposed Council elementary schools, Bolton Road and Ulundi Street.

Todmorden.—R.C. Church.

Warrington.—Smallpox hospital, Pear Tree Farm (£1,500). Borough surveyor.

Wigan.—Picture theatre and billiards hall, King Street. Mr. Ellis, architect.

LINCOLNSHIRE.

Beckingham.—Proposed isolation hospital.

MIDDLESEX.

Hanwell.—Isolation hospital (£4,000).

NORTHAMPTONSHIRE.

Harlestone.—Proposed six cottages and two houses for Brixworth R.D.C.

Upper Boddington.—House, for Mr. T. Gardner.

NORTHUMBERLAND.

Whitley Bay.—Proposed St. Paul's Church.

NOTTINGHAMSHIRE.

Nottingham.—St. John's (new) Church (£6,000).

Co-operative Stores, Upper Parliament Street. Mr. W. V. Betts, architect, Bank Offices, Radford Road, Old Basford.

SHROPSHIRE.

Hinton.—Two cottages, for Mr. Ethelston.

STAFFORDSHIRE.

Amington.—Ashlands Farm: additions and alterations, for the Tamworth Co-operative Society.

Glascote.—Two houses, Moor Lane, for Mr. Grant.

Gnosall.—Parochial school: alterations, &c. Mr. H. T. Sandy, architect, 22 Greengate Street, Stafford.

Wilnecote.—House and shop, for Mr. J. Ward.

SUFFOLK.

Brandon.—Proposed hospital.

Lowestoft.—The Marina Theatre: alterations, for Mr. B. Pareezer.

SURREY.

Guildford.—Proposed forty-two cottages, for the Town Council (£10,500).

Redhill.—Proposed police and fire station, London Road.

SUSSEX.

Horsham.—The "Station" Hotel: alterations for the Rock Brewery Co.

WARWICKSHIRE.

Atherstone.—Power house, for the Baddesley Colliery Co.

Foleshill.—Four houses, the Copswood Estate, for Messrs. Copswood.

YORKSHIRE.

Ambler Thorn.—Liberal Club-house.

Beverley.—Glue Works, for Messrs. Hodgson & Sons.

Bradford.—Shed, for Messrs. Jeremiah Ambler & Sons. Messrs. S. Jackson & Son, architects, Tanfield Chambers, Piece Hall Yard.

Dewsbury.—Shop, Northgate. Messrs. Holtom & Fox, architects, Corporation Street.

Huddersfield.—Wesleyan Methodist church and school, Leeds Road (£3,250).

Chemical Works, Milnsbridge: additions. Messrs. Lunn & Kaye, architects, 14 John William Street.

WALES.

Mold (near).—The "Liver" Inn, Rhydtalog: reconstruction. Mr. F. A. Roberts, architect, Earl Chambers.

Weston Rhyn.—Twenty-one garden village houses.

Wrexham.—Proposed thirty working-class houses (£6,100).

SCOTLAND.

Aberdeen.—Factory. Mr. W. E. Gauld, F.R.I.B.A., architect, 11A Dee Street.

Garage. Messrs. D. & J. R. McMillan, F.R.I.B.A., architects, 105 Crown Street.

Garage. Mr. J. G. Watt, F.R.I.B.A., architect, 17 Union Terrace.

Arbroath.—Smallpox hospital, Little Cairnie. Messrs. J. & R. W. Sievwright, contractors (£1,775).

Cults.—Parish church for 400 sittings (£4,500). Mr. A. M. Mackenzie, F.R.I.B.A., A.R.S.A., architect, 343 Union Street, Aberdeen.

Dumbarton.—Workmen's mess-room, Bankend Road, for Messrs. Denny & Co.

Dundee.—Premises, Constable Street: extension, for Mr. E. A. Pyott.

Edinburgh.—Nos. 21, 23, 27, and 29 North Bridge: alterations, for Patrick Thomson, Ltd.

Galashiels.—The Netherbarns (Sanderson Memorial) Hospital (20 beds). Mr. John Hall, architect, Ladhope Vale.

Glasgow.—Red Cross Hospital, Bellahouston: Ayrshire Block.

IRELAND.

Ashford (Co. Wicklow).—R.C. Church (£2,500).

Blackrock (Co. Dublin).—Zion Hill Convent: extensions, &c. Mr. C. B. Powell, architect, 107 Rathmines, Dublin; Mr. J. Greene (contractor), 3 Bushfield Terrace, Donnybrook.

Connor.—Presbyterian Church: Messrs. Patterson & Grahame, architects, Scottish Provident Buildings, Belfast.

Donaghadee.—House: Messrs. Hobart & Heron, architects, 120 and 121 Scottish Provident Buildings, Donegall Square W., Belfast; Mr. W. Dowling, contractor, 106-112 Cromwell Road, Belfast.

Ennis.—Sanatorium, Ballymaley. Mr. W. H. Allen, C.E., architect, The Terrace.

AT a meeting of the Aberdeen Provincial Committee for the Training of Teachers the Convener, referring to letters received from three of the contractors for the new training centre buildings, requesting consideration on account of the enhanced prices of materials caused by the present war, said the reply which the Plans and Buildings Sub-Committee proposed to send was to the effect that, in the exceptional circumstances, the Provincial Committee were prepared, when the contracts were completed to their satisfaction, to make, subject to the approval of the Scotch Education Department, an *ex gratia* payment to account of any unavoidable loss the contractors might be able to satisfy the Committee that they had sustained in connection with any of the items in the contract directly due to the war. The committee approved of the terms of the reply.

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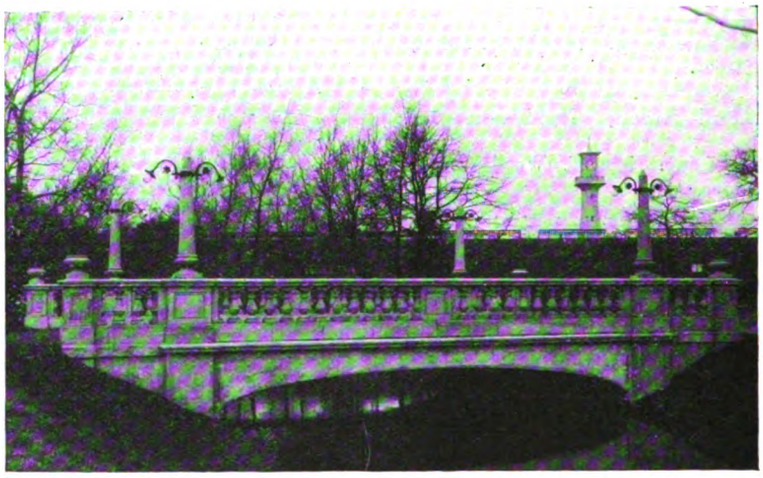
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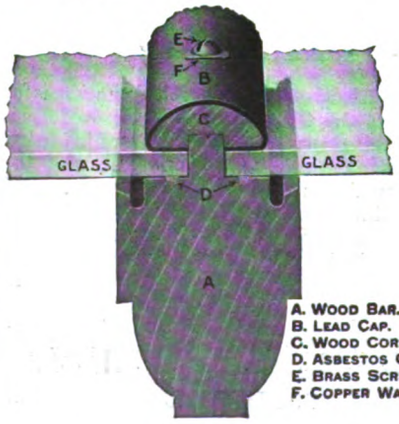
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THE
Architect and Contract Reporter.
FRIDAY, JUNE 25, 1915.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

ANSWERS TO CORRESPONDENTS.

Property on Mortgage (A. B., Highgate).—There is no way of ascertaining whether a fresh mortgage has been made, except by inquiries from the parties thereto or their solicitors, none of which persons is bound by law to give the information required. The fresh mortgage you refer to would be of secondary value unless and until the first had been discharged. Your position would not be affected thereby if it was clearly defined beforehand.

COMPETITIONS OPEN.

GALEMIRE (WHITEHAVEN).—The Galemire Joint Hospital Committee invite competitive designs for a small hospital proposed to be erected in their district. Full particulars may be obtained from Mr. E. B. Croasdell, clerk to the Committee, Union Hall, Whitehaven.

IRELAND.—July 27.—The Cleansing Committee of the Dublin Corporation invite designs from landscape designers, &c., resident in Ireland for laying out the reclaimed ground at Fairview, Dublin, and for the conversion of same into a public park. Premiums of £50, £10, and £5 will be awarded for the first, second, and third designs respectively, as selected. A copy of the conditions of competition, and a map of the site, will be furnished to each intending competitor on lodgment of £1, which will be returned on receipt of a design and report. Applications to be addressed to the Secretary, Cleansing Committee, Dublin Corporation, Lord Edward Street, Dublin.

PLYMOUTH.—The Committee of the Plymouth Mutual Co-operative and Industrial Society, Ltd., invite architects practising in the United Kingdom to submit designs in competition for business premises to be erected in Frankfort Street, Plymouth, on a site containing about 24,000 square feet. Premiums of £75, £50, and £25 are offered for designs placed second, third, and fourth. Plan of site and instructions prepared by Mr. Paul Waterhouse, M.A., F.R.I.B.A., the assessor, can be had on application (accompanied by a deposit of 5*s.*) to the General Secretary, Plymouth Mutual Co-operative and Industrial Society, 15 to 18 Frankfort Street, Plymouth.

CONTRACTS OPEN.

ALDERSHOT.—June 29.—For erection of a new building, Station Road, for Messrs. Wilson & Lennards. Messrs. Friend & Lloyd, architects, Grosvenor Road, Aldershot.

ALDERSHOT.—June 29.—For erection of an additional brick-built fever block at the isolation hospital, North Town, for the Urban District Council. Mr. F. C. Uren, surveyor, Municipal Buildings, Aldershot.

ASKERN.—For the extensions and conversion of two houses into shops at Askern. Mr. P. Robinson, F.R.I.B.A., architect, Hall Gate Chambers, Doncaster.

BAGULEY.—June 30.—For the erection of piggeries at Baguley Sanatorium, for the Manchester Sanitary Committee. Deposit 10*s.* 6*d.* The office of the City Architect, Town Hall, Manchester.

BARNSLEY.—June 30.—For the various summer renovation works to be carried out at the schools during the month of August, for the Education Committee. Mr. E. W. Dyson, architect, Regent Street, Barnsley.

BATLEY CARR.—July 1.—For the proposed installation of electric light and stone building for motor, at the Batley Carr Church. Dr. Ward, Highbury, Batley Carr.

BEDFORD.—July 7.—The Bedfordshire Education Committee have under consideration the question of renovation works (chiefly external painting and repairs, &c.) at various Council schools. Mr. R. K. Ellison, surveyor of school buildings, Shire Hall, Bedford.

BRADFORD.—June 29.—For all trades reqiured in erection of shed and other work at Dumb Mill, Frizinghall, for the Corporation. The City Architect, Town Hall, Bradford.

BROMSGROVE.—June 29.—For certain alterations to the Bromsgrove C.E. schools. Send applications and £1 1*s.* deposit by June 29 to Mr. J. H. Williams, architect, 15 Foregate Street, Worcester.

CARSHALTON.—July 14.—For the following works, for the Metropolitan Asylums Board: (1) Queen Mary's Hospital for Children, roof repairs and painting work; (2) Queen Mary's Hospital for Children, Carshalton, Surrey, forming new doorways to cottage blocks. Deposit £1 each contract. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the office of the Board, Embankment, E.C.

CASTLEFORD.—For conversion of property, Carlton Street, into shops, offices, &c., for Mr. T. C. Binks. Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

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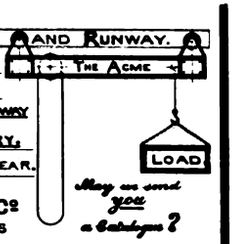
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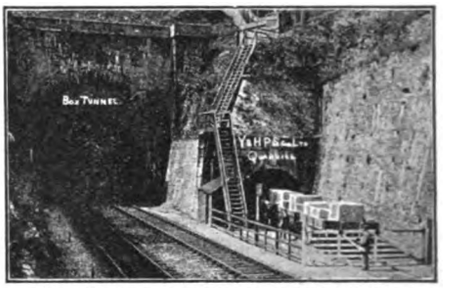
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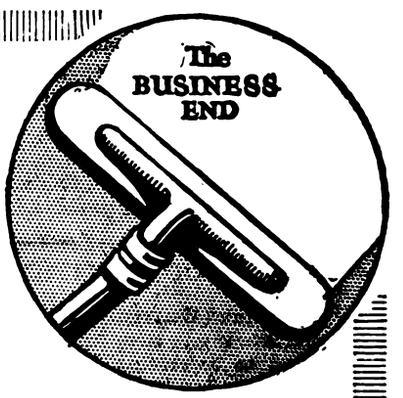
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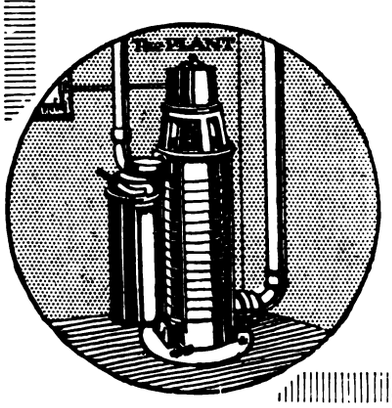
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CHATHAM.—July 5.—For improvements to window lighting at the technical institute, Chatham, for the Kent Education Committee. Mr. R. L. Wills, local secretary, 2 Military Road, Chatham.

CHRISTON BANK.—July 2.—For erection of a two-storeyed dwelling-house at Christon Bank, Northumberland. Mr. M. Temple Wilson, architect, Alnwick.

CHYCOOSE.—June 30.—For alterations of the house at Chycoose, near Perranwell Station, the property of the Hicks Mill United Methodist Circuit. The Rev. W. Veale, Coombe House, Hicks Mill, Perranwell, Cornwall.

DINNINGTON.—For erection of a church and presbytery at Dinnington (Rotherham). Send names and £1 1*s.* deposit at once to Messrs. Blenkinsopp & Scatchard, architects, Park Street, Selby, Yorks.

DOVER.—July 5.—For summer repairs at the County School for Boys, St. Hilda's, for the Kent Education Committee. Mr. R. E. Knocker, local secretary, 69 Castle Street, Dover.

ELY (CAMBS).—July 5.—For erection of an isolation hospital, with drains, roads, fences, &c., in connection therewith on St. John's Road, for the Ely Urban and Rural District Councils. Deposit £1. Mr. S. J. Wearing, A.R.I..B.A., architect, 15 Upper King Street, Norwich, or at the City Surveyor's Office, Fore Hill, Ely.

GODALMING.—June 30.—For erection of a sanatorium at Highdown, Hyde Stile, near Godalming, Surrey, for the Metropolitan Asylums Board. Deposit £5. Mr. E. T. Hall, F.R.I.B.A., architect, 54 Bedford Square, W.C., and the Office of the Board, Embankment, E.C.

GOOLE.—July 7.—For erection of a shelter and convenience in Hook Road Park, for the Goole Urban District Council. Mr. J. H. Castle, engineer and surveyor, Council Offices, Goole.

HADLEIGH (ESSEX).—July 6.—For altering and decorating the premises known as Homeleigh, George Street, in the preparation of same as a cottage hospital, for the Committee of the Hadleigh and District Cottage Hospital. Mr. C. Dudley Bright, Polstead Heath, Polstead, Colchester.

IRELAND.—June 28.—For building six labourers' cottages, for the Rathdrum Rural District Council. Mr. P. W. Sheehan, clerk, Rathdrum.

LONDON.—June 28.—For erection of an overground convenience in East End Road at the rear of the "Bald-faced Stag" public-house, for the Finchley Urban District Council. Deposit £3. Mr. C. J. Jenkin, M.I.C.E., engineer and surveyor, Council Offices, Church End, Finchley, N.

LONDON.—June 29.—For the erection of a labour exchange at Canning Town, London, E., for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* Mr. H. Ashmead, H.M. Office of Works, 12 Queen Anne's Gate, Westminster, S.W.

MARGATE.—July 5.—For summer repairs at the School of Art, for the Kent Education Committee. Mr. E. Brooke, town clerk (local secretary), Margate.

MANCHESTER.—July 1.—For the work required in erection and completion of a new engine-house at their Gaythorn station, for the Gas Committee. Deposit £1 1*s.* Mr. Fredk. A. Price, superintendent, Gas Department, Town Hall, Manchester.

MANCHESTER.—July 2.—For the execution of sanitary alterations at Nos. 2, 4, 6, and 8 Short Street, Barlow Road, Levenshulme, for the Corporation. The Manager of the Drainage Department, Town Hall, Manchester.

MIDDLESBROUGH.—June 29.—For construction after fire and other work required at the Corporation baths, for the Sanitary Committee. Mr. S. E. Burgess, M.I.C.E., borough engineer, Municipal Buildings, Middlesbrough.

MORLEY.—For slating the roof of the quarantine block at Bruntcliffe Hospital, for the Health Committee. Mr. F. Turner, B.Sc., A.M.I.C.E., borough engineer and surveyor, Town Hall, Morley.

OXENHOPE.—June 25.—For erection of additions to West View, Oxenhope, Yorks. Messrs. Moore & Crabtree, Town Hall Square, Keighley.

RAMSGATE.—July 5.—For summer repairs and improvements at the County School, for the Kent Education Committee. Mr. R. K. Gooch, local secretary, 5 Clarendon Gardens, Ramsgate.

RIPPLE.—July 5.—For the execution of summer repairs at the Ripple Council School, for the Kent Education Committee. Mr. F. S. Cloke, correspondent, Sandwich, Kent.

SCARBOROUGH.—June 30.—For erection of new business premises at the corner of Queen Street and Market Street, for Messrs. W. Boyes & Co., Ltd. Mr. J. C. Petch, architect, Bar Chambers, Scarborough.

SCOTLAND.—For the erection of several houses and steadings in connection with the small holdings scheme at Sark Tower, near Gretna. Mr. H. M. Conacher, secretary, Board of Agriculture for Scotland, Edinburgh.

SCOTLAND.—June 29.—The Dundee Combination Parish Council invite offers for the mason, joiner, plumber, plaster, slater, and electric-lighting works of alterations to Gate Lodge at Children's Home, Ashcliff, Perth Road. Mr. T. Martin Cappon, F.R.I.B.A., 32 Bank Street, Dundee.

SCOTLAND.—June 30.—The School Board of Glasgow invite tenders for the removal of Shakespeare (temporary) School, Hathaway Street, Maryhill, the smaller building to be re-erected in the playground at Hydepark Public School, Mollinsburn Street, Springburn, and the larger building to be re-erected in the playground at Maryhill Public School, Viewmount Drive, Maryhill. Deposit 10*s.* 6*d.* The School Board Offices (Property Department), 129 Bath Street, Glasgow.

SCOTLAND.—July 3.—The Edinburgh District Board of Control invite offers for joiner, plumber, and other work in connection with the fitting up of medical side-rooms, the alteration of the ward windows, and the fitting up and equipment of a scullery in connection with the dining hall at the Edinburgh War Hospital, Bangour. The Clerk of Works' Office, Bangour.

TONBRIDGE.—June 28.—For the erection of a post office and telephone exchange at Tonbridge, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s.* The Postmaster, Tonbridge, and H.M. Office of Works, &c., Storey's Gate, London, S.W.

ULVERSTON.—July 5.—For erection of a new shed at Low Mill Tannery, Ulverston, for Messrs. Randall & Porter, Ltd. Messrs. J. W. Grundy & Son, architects and surveyors, Ulverston.

WAKEFIELD.—July 3.—For (1) painters' work at East Ardsley, Hill Top, Stourton, Thorpe, and Lingwell Gate Council Schools; (2) builders' work at East Ardsley, Hill Top, Westerton, Rothwell, Carlton, Robin Hood, Thorpe, Outwood, Lingwell Gate, Wrenthorpe, Stourton, and Crofton Council Schools; (3) joiners' work at East Ardsley, Westerton, Wrenthorpe, and Crofton Council Schools; (4) asphalters' work at Lofthouse Gate and Stourton Council Schools; (5) plumbers' work at Carlton Council School, for the West Riding Education Committee. Mr. A. Angus, West Riding Education Offices, Wakefield.

WALES.—For re-roofing the classroom at the Pontgarreg Council School, for the Cardigan County Education Committee. Mr. G. D. Lewis, county architect, Aberystwyth.

WALES.—June 26.—For the rebuilding of the Tylers' Arms, Nelson, Glam., for Mr. L. Edwards. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—June 28.—For the rebuilding of the Onllwyn Inn, Onllwyn, for Mr. E. Evans Bevan, Neath. Mr. J. C. Rees, M.S.A., Parade Chambers, Neath.

WALES.—July 3.—For erection of ten semi-detached officials' houses at Wattstown, Glamorgan, for the United National Colliery Company. Messrs. A. O. Evans, Williams & Evans, architects, Pontypridd.

WALES.—July 10.—For erection of verandah at Ely Lodge, near Cardiff, for the Guardians. Mr. A. J. Harris, clerk, Union Offices, Queen's Chambers, Cardiff.

WHITBY.—July 2.—For the plastering of the wash-house in cement, &c., at the Whitby Poor-Law Institution, for the Guardians. Mr. W. Seaton Gray, clerk, 38 Flowergate, Whitby.

WIGTON.—For the work of adapting an existing building in Wigton to the purposes of a cinema picture palace, to be completed for opening on August 2. Builders, joiners, plasterers, &c., intending to tender must forward their names at once to the architect, Mr. John J. Davison, High Street, Wigton.

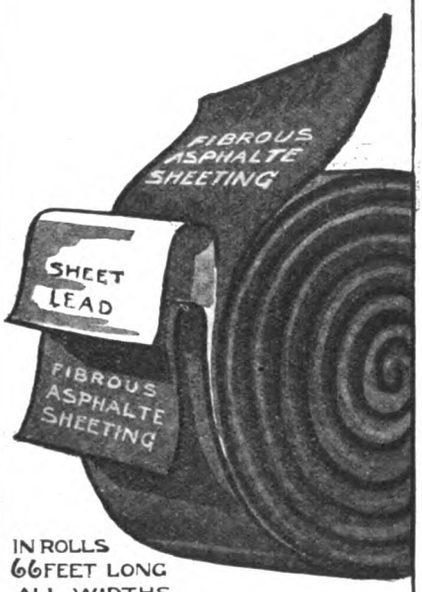
WINGATE.—June 30.—For the erection of ten semi-detached cottages for aged workers. Send applications and £1 deposit by June 30 to Mr. J. Wilson, Hays, Wingate.

WINTERBORNE ZELSTON (DORSET).—July 7.—For erection of cow stalls, cart sheds, piggeries, &c., at the Winterborne Zelston Farm, for the Dorset County Council. Mr. T. B. Jeffs, county land agent, Small Holdings Department, County Offices, Dorchester.

WREXHAM.—July 8.—For the following works, for the Corporation: (1) redecorating Corporation cottage, Holt Road; (2) redecorating cemetery lodge; (3) painting sheds, &c., Smithfield; (4) alterations to offices at Guildhall. Mr. J. England, borough engineer, Willow Road, Wrexham.

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TENDERS.

BARNSTAPLE.

For erection of a dwelling house in Pilton Street, for the Trustees of Pilton United Charities. Mr. J. C. SOUTHCOMBE, P.A.S.I., architect, Bridge Buildings, Barnstaple.

Cooke & Sons	£656	0	0
Karslake	590	0	0
Sillifant & Sons	585	0	0
Burgess	565	0	0
Pickard	560	0	0
Rice	554	10	0
J. Cater & Sons	545	0	0
Harding	537	17	0
Allen	532	17	0
R. PICKETT, Ilfracombe (*accepted*)	450	0	0

BRADWELL.

For the renovation of the old school, for the Bucks County Education Committee.

EBBS BROS., Wolverton (*accepted*)	£165	0	0

DELPH.

For the erection of a shed at Gatehead Mills.

Accepted tenders.

Gerrard & Sons, masons, Swinton, Manchester.
Varley & Sons, joiners, Slaithwaite, Huddersfield.
Dobson, plumber, High Street, Delph.
Whitehead, plasterer, Myrtle Grove, Diggle.
Whitehead, painter, Showhall Bank, Greenfield, near Oldham.
Wild & Sons, slaters, Ashton-under-Lyne.
Dyson, concretor, Lindley, Huddersfield.
Shaw, ironfounder, Milnsbridge, Huddersfield.
Haywood & Co., patent glaziers, Huddersfield.

EVESHAM.

For additions and alterations to the administrative block at the Evesham Sanatorium, for the Joint Hospital Board. Mr. H. S. HARVEY, architect and surveyor, Evesham.

ESPLEY & Co., Evesham (*accepted*)	£1,272	10	0

GRIMSBY.

For the erection of a five-stall extension to the household scavenging stables, for the Corporation. Mr. H. GILBERT WHYATT, M.I.C.E., borough engineer, Grimsby.

Waterman	£360	15	0
Hipkin	340	0	0
East & Graves	337	10	0
H. & C. Thompson	333	0	0
Ion	330	0	0
Gilbert	325	0	0
Smith	322	0	0
Holmes & Co.	311	10	0
Cartledge	296	0	11
Swaby & Walsham	288	17	0
Hewins & Goodhand	287	10	0
EDWARDS & RAYNOR, Grimsby (*accepted*)	285	8	0

HARROGATE.

For the rebuilding of a boundary wall at the gasworks, Ripon Road. Mr. FRANK H. ROBINSON, C.E., engineer. Quantities by the architect.

A. Hymas	£380	18	5
Kershaw & Hill	367	0	0

Both of Harrogate.

LONDON.

For erection of an extension to the Woolwich tramways sub-station, for the London County Council.

C. Wall, Ltd.	£2,259	0	0
Y. J. Lovell & Son	1,867	0	0
J. Marsland & Sons	1,685	0	0
J. & C. Bowyer, Ltd.	1,646	0	0
A. Roberts & Co., Ltd.	1,622	0	0
Thomas & Edge (incomplete)	1,520	0	0
T. D. LENG, Czar Street, Deptford (*accepted*)	1,423	0	0
Architect's estimate	1,575	0	0

The amounts of the tenders are for comparative purposes only on the basis of a schedule of prices, and do not represent the estimated value of the work to be executed.

PENGAM.

For erection of a new Constitution Club at Twynn-y-ffald, Pengam, Mon., for the Twynn-y-ffald Constitutional Club Company, Ltd. Mr. D. J. THOMAS, M.S.A., architect, Blackwood. Quantities by the architect.

Walters & Sons	£2,587	0	0
E. J. Davies & Co.	2,553	1	10
W. H. Evans & Co.	2,365	0	0
Green	2,252	19	0
T. F. Howells	2,250	0	0
Davies & Lloyd	2,218	0	0
A. S. Morgan	2,210	0	0
J. B. Perkins	2,195	13	1
R. JONES, Caerphilly (*accepted*)	2,030	0	0
E. James	2,009	3	3

SCOTLAND.

For works in connection with the Heathfield Hospital, for the Ayr Corporation. Mr. J. YOUNG, A.M.I.C.E., engineer, Ayr.

Accepted tenders.

M. McNinch, Robsland Avenue, builder	£1,742	4	9
J. & D. Meikle, 44 Main Street, carpenters	194	0	0
W. Auld & Sons, 70 Sandgate Street, slaters and plasterers	169	0	0
W. Baillie & Sons, 89 High Street	83	15	0
M. Glen, Boston Cottage, Somerset Road	78	8	0
W. Auld & Sons, electricians	57	0	0

POINTS RESPECTING REINFORCED CONCRETE FOR ROADS, SEWERAGE, &c.*

By ARTHUR E. COLLINS, M.Inst.C.E. (Past President).

THE ease with which the best shapes for any particular construction can be obtained in reinforced concrete has always made it a fascinating material to engineering and architectural designers. Its durability has been proved in many ways, including the life of reinforced-concrete houses built in Newcastle-on-Tyne half a century or more since. When the brick walls of the sea lock at Lowestoft were pulled down some years since the writer saw hoop-iron reinforcing taken out quite free from rust. It had been in position between high and low water for half a century or more; its condition was due to the protecting influence of mortar. All the reinforcing iron found was in equally good state. That reinforced concrete is reliable is shown by the large number of bridges, reservoirs, piers, wharves, sewers, and buildings of all sorts constructed of it and giving good service. Where failures have occurred good reasons have been found, and these failures have not indicated properly designed and made reinforced concrete to be an improper material for use under a wide variety of conditions.

In the early days of reinforced concrete too much reliance was placed on the surface adhesion of concrete to steel, and neither sufficient knowledge nor care was exhibited in properly disposing the reinforcement, nor in making and using the concrete; accumulating experience has largely remedied this, and to-day good methods are well known and generally applied, but it depends on the responsible engineers of works to ensure that they are applied.

The average municipal engineer has neither the time nor the staff to make the voluminous calculations necessary to design in this material, and must be satisfied by the use of tables after carefully checking them. The "Manual of Reinforced Concrete," Marsh & Dunn (Constable & Co., 10 Orange Street, Leicester Square, W.C.), is of great use to one engaged in designing. The "Graphical Handbook for Reinforced Concrete Design," by J. Hawksworth, published by Crosby Lockwood, has proved most useful in the writer's office.

Anyone using these tables should note that the best British practice allows of somewhat higher values for concrete in compression than the constants in Hawksworth. Hawksworth refers to the New York Building Law, wherein the maximum allowable compression in concrete is 500 lb. on the square inch, whereas the Draft of Regulations of the

* A Paper prepared for the forty-second annual general meeting and conference of the Institution of Municipal and County Engineers at Westminster, June 24, 25 and 26.

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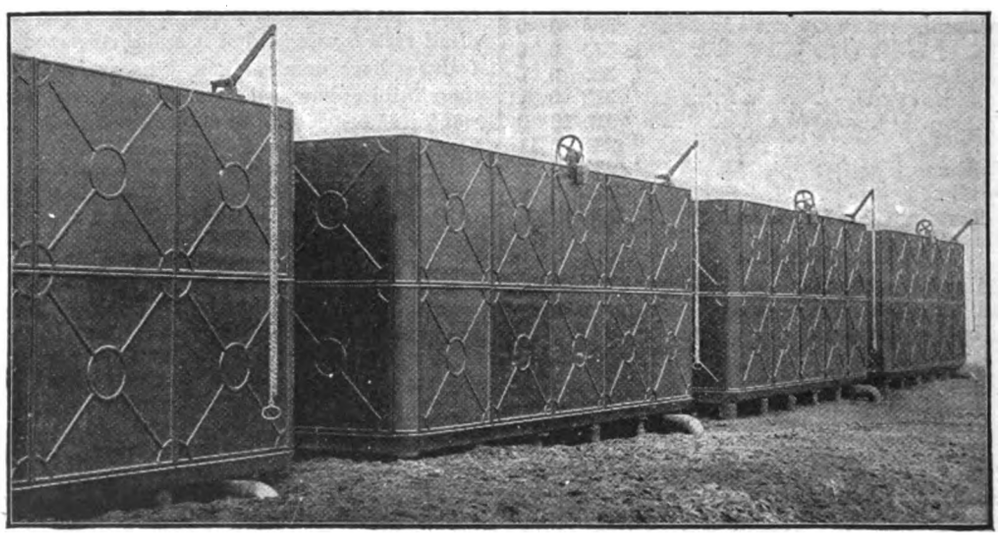
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London County Council for Reinforced Concrete of April 1915 proposes the following:—

PROPORTION BY VOLUME.

Stress in Concrete.	Cement.	Sand.	Coarse Material.	Cement.	Sand.	Coarse Material.	Cement.	Sand.	Coarse Material.	Cement.	Sand.	Coarse Material.
	1	2	4	1·2	2	4	1·5	2	4	2	2	4
	Pounds per Square Inch.			Pounds per Square Inch.			Pounds per Square Inch.			Pounds per Square Inch.		
Direct compressive stress ...	600			650			700			750		
Extreme flexural compressive stress in beams	600			650			700			750		
Shearing stress	60			65			70			75		
Grip or adhesion between concrete and steel bars, hooked at both ends	100			100			100			100		
Grip or adhesion between concrete and steel bars, otherwise effectively anchored at the ends	60			60			60			60		
Tensile stress	Nil			Nil			Nil			Nil		

Increased compressive stress is permissible in the core of a pillar suitably hooped.

Anyone likely to require to design work in reinforced concrete should study the London County Council draft of Regulations to be made under the provisions of Section 23 of the London County Council Act 1909 with respect to Reinforced Concrete, dated County Hall, Spring Gardens, April 1915. It embodies much of the work of the Joint Committee of the R.I.B.A., Inst. M. and Cy. E., District Surveyors' Association, Institute of Builders, War Office, Admiralty, London County Council, and Concrete Institute, and gives in a much more concise form than the writer is capable of a very complete set of working rules for reinforced-concrete design and construction, and excepting for suggestions on a few points no further reference will be made to rules.

Where the reinforcement bars are not sufficiently long, the writer prefers to joint them by hooking, tieing the hook, and making quite sure the bars are drawn very tightly together before concreting. If this precaution be omitted, serious results may obtain. It is obvious if any space improperly left between the hooks be filled with concrete its strength is quite inadequate to prevent the hooks drawing more or less together when the reinforcement is thoroughly stressed.

The writer was much concerned when he drove his first reinforced-concrete piles several years since by the extensive shattering of their tops and by the difficulty of making them penetrate the layer of faggots carrying the railway bank he was operating in across a marsh. The piles had been made several months, but had little strength. On considering the matter it was remembered there had been a month of severe frost, followed by cold weather, commencing shortly after the piles were cast, hindering the setting. The period allowed for setting was increased by the duration of frost, but allowance was omitted for the slow thawing during the cold period following the frost.

The remainder of the piles were not driven until thoroughly set, and no further trouble arose.

About fifteen years since the writer constructed reinforced concrete floors in a large building he was then erecting. To obtain lightness he used furnace clinkers largely in his aggregate. His equanimity was much upset by the forward movement of the whole front wall of the building, four storeys high, upon the asphalte damp course which investigation showed to be due to the presence of sulphur in the clinkers, resulting in expansion of cement in the concrete floors. The movement amounted to less than half an inch and did not continue, nor have the floors given trouble, but furnace clinkers have not been used since.

When constructing reinforced concrete, see to it that all reinforcement is properly placed, supported, and not displaced by the concreting operations. If this be not done, disaster may easily result.

Mr. R. S. Greenman, in a paper on "Causes of Concrete Failures," presented to the American Society for Testing Materials, states that "reasons for poor concrete have been proportioned as being 90 per cent. due to poor workmanship, 8 per cent. due to poor aggregates, and 2 per cent. to poor cement. The percentages are not due to tabulations, but are those prevailing in the minds of many who have had considerable opportunity for inspection of concrete both good and bad." Without expressing an opinion upon these percentages it is obvious, seeing most engineers test their cement, that the use of bad cement is not likely to be a cause of failure; again, engineers are usually able to ascertain the quality of aggregates before use. How many of us, however, have the opportunity to completely check the labour on our works? To say the least, it is probable Mr. Greenman's percentages are not far from actuality.

Care must be exercised all round. For instance, water flowing from woodlands containing vegetable extractives has a prejudicial effect on cement. Aggregates, such as destructor clinker, containing free lime are injurious. In his own work the writer has had concrete walls, pavements, steps, and other constructions injured thereby. Clinker, coke breeze, and other aggregates containing sulphur must always be avoided; they are destructive of cement. Some shale bricks contain sulphur, and old bricks of this variety are unsuitable for concrete aggregate. The writer is aware of great difficulties which arose with the brick walls of an important reservoir built with shale bricks; also with the walls of a sprinkler filter installation. The cement in the mortar became quite changed; in one case it had the appearance of unset chalk lime paste after a life of a year, although when first built the cement mortar set well.

Probably the best material for the aggregate of engineering reinforced concrete is broken Portland stone. This should be used without screening, but care must be taken to remix the various sizes if they sort themselves in transit. Mr. J. P. Wells, an acknowledged expert on reinforced concrete, thinks very highly of this aggregate. Its specific gravity is not high, it breaks with a roughly fractured surface, and there appears to be an affinity between it and cement, with the result that where concrete made with it is crushed the fractures do not generally follow the surfaces of the individual stones, whereas in the case of river ballast and of many varieties of stones this cannot be said.

The earliest use of reinforced concrete in road foundations known to the writer was by the President when engaged in road improvements in advance of tramway construction for the Middlesex County Council. In one of these roads the writer visited with him the regrading necessitated a considerable depth of clay fill: to avoid the worst consequences of settlements he covered this with a reinforced-concrete raft. Upon recent inquiry the writer ascertained this had been successful. The reinforcement did not consist of fencing wire, which is now advertised as sufficient, but of moderately heavy round bars, probably ¾-inch diameter, laid about a foot apart each way, embedded in the concrete.

The writer has had no experience with the use of the meshed wires similar to fencing wire now sold for concrete road bed reinforcement, and hopes some member who has used it will give the benefit of his experience.

Reinforced concrete is particularly adaptable for pile construction, whether they are cast before driving or the mould is prepared in the ground by driving a shell, the reinforcement inserted, and the pile cast in situ, withdrawing the shell simultaneously with the casting. Large numbers of piles cast in situ are not reinforced. Probably the best known in this country of the in situ piles are the Simplex piles.

Reinforced concrete is a most adaptable and suitable material for constructing manholes, underground chambers, &c., in unstable or water-bearing ground. The structures can be moulded in the dry and sunk to the required depths, necessitating the minimum of timbering and pumping.

About twenty years since the writer sunk a large double-screening chamber to many feet below water-level in very bad, freely permeable ground. The work was quite successful in construction, and has cost nothing to maintain.

For retaining and abutment walls reinforced concrete is especially suitable, particularly where great width of foundation and weight are wanted, as in many dock walls. The walls can be constructed with flat-plate or deck foundations, of any desired extension, vertical flanges, buttresses or revetments, and weighting shelves moulded at the back of the wall so that the whole construction is monolithic. The soil removed in preparing the foundation can be filled in on the plate or deck foundation, and upon the weighting shelves at the back of the wall to provide the necessary weight.

The writer has used reinforced concrete largely in sewer construction and with great economy. The 36-inch pumping rising main at Norwich was constructed in this material some ten years since on the "Bonna" system. It has been entirely successful in all respects. The pipe cost about one-half that of a cast-iron pipe, and three-quarters that of a steel pipe. It has cost nothing in maintenance, and appears as good as new. A description of this pipe may be seen in the author's paper, page 185, Vol. XXXIV., 1907-8, of the proceedings. The pipes were made by the Columbian Fire-

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proofing Company; the present makers are Messrs. Hughes & Lancaster, 16 Victoria Street, S.W.

There are considerable lengths of reinforced concrete gravitating sewage and surface water sewers in Norwich from 42 inches diameter down to 21 inches. Some have been laid a quarter of a century. All have been entirely satisfactory: no repairs have been done to any of them, and they are as good as when laid.

A cheap and convenient combination of concrete with steel can be used for the construction of culverts as follows:—

Prepare a suitable concrete bed, finishing to about one inch below invert level; on this bone in concrete supports say 3 inches by 3 inches by about 1 inch high to the desired gradient and height to support sheet iron or steel, slip-jointed pipes; cover the pipes with concrete to the desired thickness. Using suitable concrete the construction may be buried the day after construction. Eventually the sheet metal will rust away, leaving a concrete interior surface to the culvert. If it be desired to avoid this, insert a spiral of, say, $\frac{3}{16}$-inch or $\frac{1}{4}$-inch wire to fit sheet metal pipe, the pitch of spiral being, say, 9 inches; place a collapsible mould 2 inches smaller than the pipe concentrically within it, and run the annular space full of fine concrete. This is, of course, done before the pipes are laid. Allow for the lap of the slip joints when casting the interior concrete.

The writer has used such construction (omitting the concrete lining) successfully and economically in a trench from which the tide could not at all times be excluded.

VARIETIES.

MR. E. C. FRERE, A.R.I.B.A., has prepared plans for the proposed headquarters in Hallam Street, W., for the General Medical Council.

MR. ARTHUR MARSHALL, A.R.I.B.A., aged 56, of Lockington, Leics., and of Nottingham, has left estate valued at £23,796 (net personalty £992).

THE L.C.C. Education Committee have put £8,000 into the year's estimates to enable their architectural department to prepare plans for one year's building work at the end of the war.

NUNEATON Borough Corporation have released for military duty their engineer and surveyor (Mr. F. C. Cook), medical officer (Dr. Maitland), and manager of the electric light works (Mr. Cameron Gibson).

PROFESSOR SELWYN IMAGE, M.A. (Slade Professor, Oxford) has been engaged by the London County Council to continue his course of lectures during the 1915-16 session at the Central School of Arts and Crafts at a fee of £75. The fifteen lectures will be on the "History of Art."

CARDIFF is developing rapidly in a northern direction. The work of clearing the wood where the new road is to be made on the Heath Estate close to the Heath halt station has been started within the past few days. About 100 houses are to be erected here.

MESSRS. CHARLES SMITH & SON, architects, Reading, have been instructed by the Reading Education Committee on the advice of the Board of Education to revise their plans of the proposed Kendrick Girls' School Buildings with a view to a substantial reduction in cost.

THE housing problem in the Kiveton Park area appears, from the sanitary inspector's annual report, to be in a fair way of solving itself. He states: "It is very pleasing and interesting to note that the Council's request for the erection of additional cottages to house the working class population in the district has met with a good amount of success. This is particularly the case at Dinnington, Kiveton Park, and Anston, where 104 have been built, and a further 53 are in course of erection. In addition to these, plans have been submitted for the building of a further 83 cottages."

A SMOKE Abatement Exhibition is to be held in Glasgow early in the autumn in the Exhibition Hall, New City Road. The exhibition will be under the patronage of Glasgow Corporation and of the local branch of the Smoke Abatement League of Great Britain. It is anticipated that many of the leading firms throughout the country possessing specialities in smokeless fuel and combustion, as well as in heating and lighting by either gas or electricity, will co-operate with the promoters. The preliminary classification of probable exhibits embraces 15 sections. There will be a daily programme of lectures, demonstrations, and competitions.

THE Yorkshire Philosophical Society are taking steps to secure three more houses in Bootham with a view to opening out an additional portion of so much as still remains of the mediæval wall which originally surrounded the Abbey of St. Mary at York. One half of a small round tower was exposed by a former clearance. A house which obscured the other portion from view has now been purchased. The total cost of the three houses is about £1,300, and an appeal is being made to raise the sum. The committee explain that they realise that the present is not an ideal time for the issue of an appeal, but the choice of the time is unfortunately beyond their control, as the work can only be done as opportunities present themselves.

THE architectural Roll of Honour now includes the name of Temporary Lieutenant John Nixon Horsfield, Hawke Battalion, Royal Naval Division, who on June 20 died of wounds received in action at the Dardanelles. He was the son of the late Mr. Nixon Horsfield, architect, of Kingston-on-Thames and Surbiton. He was thirty-two years of age, educated at the City of London School, and afterwards practised as an architect, being an A.R.I.B.A. and a F.S.I. Enlisting as a seaman in the Royal Naval Division shortly after the outbreak of war, he received a sub-lieutenancy in November, and a temporary lieutenancy about a month later. Lieutenant Horsfield, who had been at the Dardanelles since the end of May, was well known up-river as a rowing man, and lived at Thames Ditton.

THE committee of the Winchester College Mission Church at Rudmore, Portsmouth, announce that they have abandoned the original design for a Gothic church, and have commissioned the architects, Messrs. J. & P. Coleridge, to design a basilica instead. Mr. M. J. Rendall, headmaster of the College, explained that the original design was so grand and attractive in itself that it was with the utmost reluctance that the committee were obliged to abandon it. It was purely a question of finance due to the war. The committee were prepared to increase the original figure of £12,000 to £15.000, but the lowest tender was £19,000. The maximum of £12.000 was fixed for the new design, but this sum does not include the furniture of the church and certain other expenses. The style chosen is that of Northern Italy, with a wide and lofty nave. The sum received up to the present is about £12,700, and it is estimated that £2,500 or £3,000 will be needed.

TRADE NOTES.

MESSRS. J. TYLOR & SONS, LTD., sanitary and hydraulic engineers, Belle Isle, York Road, N. (showrooms, 232 Tottenham Court Road, W.), inform us that they supplied the whole of the sanitary fittings in the recently completed premises in King William Street, E.C., for the Bank of Victoria, Ltd. This building, of which Mr. O. P. Milne, F.R.I.B.A., is the architect, was illustrated in our issue of last week.

THE directors of the London and North-Western Railway have decided, after full investigation and exhaustive trial, to instal a plant at their Wolverton works for the purpose of rendering wood fireproof by the "Oxylene" process. The wood so fireproofed is to be used in the construction of their railway carriages, wagons, &c., and the plant to be installed will be capable of dealing with 150,000 cubic feet of wood per annum. The "Oxylene" process is the one which has been adopted for general building construction by Messrs. Cadbury Bros., Ltd., Wm. Cooper & Nephews, &c. The sole proprietors of the process are the Timber Fireproofing Company, Ltd., Townmead Road, Fulham, S.W.

AT the Royal Agricultural Show, which opens at Nottingham on the 29th inst., the enormous value of the stock and machinery exhibited renders the question of fire protection of very great importance. The management has not lost sight of this fact, and the fire-extinguishing arrangements are in the able hands of Messrs. Merryweather & Sons, who will have a fire station on the ground equipped with motor and horse draught fire engines, while hydrants will be available at various parts of the yard, as well as a number of small extinguishers for "first aid." A section of the Merryweather Fire Brigade is to be in attendance, firemen being on duty day and night. The firm are also making a special show of water supply, irrigation, and spraying apparatus, including petrol and steam-driven pumps, and those interested in such matters would be well advised to inspect the various appliances on view.

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